



# EMUGE

**Gewindetechnik · Bohrtechnik · Spanntechnik**  
Threading Technology · Drilling Technology · Clamping Technology



Webshop





# Katalog · Catalogue 160

Im Rahmen der technischen Weiterentwicklung und Programmbereinigung behalten wir uns vor, dass im Katalog angebotene Werkzeuge nicht mehr in der bisherigen Form lieferbar sind. In diesen Fällen beraten Sie unsere Mitarbeiter gerne bezüglich geeigneter Ersatzwerkzeuge.

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## Mehr als 100 Jahre Präzision und Innovation. More than 100 years of precision and innovation.

EMUGE als Teil der EMUGE-FRANKEN Unternehmensgruppe entwickelt und produziert Präzisionswerkzeuge für die Gewinde- und Bohrungs-herstellung sowie für die Werkzeug- und Werkstückspannung. Das vielfältige Programm verfolgt dabei das Ziel, eine Werkzeug-Systemlösung ab der Maschinenspindel bis zur Fixierung des Werkstücks anzubieten.

Gewindebohrer, Gewindeformer und Gewindefräser stehen für eine Vielzahl an Abmessungen und Werkstoffen zur Verfügung.

Für hervorragende Bohrungsqualität sorgen Spiralbohrer, die zudem perfekt auf die Gewindewerkzeuge abgestimmt sind.

Ein ausgewähltes Programm an Schneideisen und Gewindewalzrollen ermöglicht die zuverlässige Herstellung von Außengewinden.

Zahlreiche Werkzeug-Aufnahmen und Gewindelehren vervollständigen den Systemgedanken und tragen durch ihre Produktmerkmale zur Produktivitätserhöhung bei.

Abgerundet wird das umfangreiche Produkt-Portfolio durch Standard- und Sonderlösungen für die Werkstückspannung, wodurch das Optimum im Fertigungsprozess erreicht wird.

EMUGE as part of the EMUGE-FRANKEN company association develops and manufactures precision tools for the production of threads and drill holes as well as for the clamping of tools and workpieces. The diverse programme aims at offering a tool system solution from the machine spindle to the clamping of the workpiece.

Taps, cold-forming taps and thread milling cutters are available for a variety of dimensions and materials.

Twist drills provide an excellent drill hole quality, which are also perfectly adapted to the threading tools.

A selected range of dies and thread rolls enables the reliable production of external threads.

Numerous tool holders and thread gauges complete the system-based approach and their product features contribute to an increase in productivity.

The extensive product portfolio is rounded off by standard and special solutions for workpiece clamping, thereby achieving the optimum result in the production process.



Vertriebsgebiete und Produktionsstandorte in Deutschland  
Sales areas and production locations in Germany





### FRANKEN – Unser Schwesterwerk in Rückersdorf

Als Systemlieferant im Bereich Frästechnik bietet FRANKEN ein breites Spektrum an Hochleistungswerkzeugen für die moderne Fertigung. Mit seiner Typen- und Schneidstoffvielfalt, dem hohen Standard und der kompromisslosen Präzision entsprechen diese Werkzeuge höchsten Qualitätsanforderungen und sind für fast alle Werkstückmaterialien geeignet. Ein durchgängiges System an Fräsespannmitteln rundet das Lagerprogramm ab.

### FRANKEN – Our sister company in Rückersdorf

As a system supplier in the field of milling technology FRANKEN offers a wide range of high-performance tools for the modern production. These tools meet the highest quality requirements thanks to their wide range of designs and cutting material and the high standard of uncompromising precision, and are suitable for almost all workpiece materials. A consistent range of milling chucks completes the stock programme.

## Wir sind in Ihrer Nähe. Weltweit. We are nearby. Throughout the world.

EMUGE-FRANKEN ist heute in allen wichtigen Industrienationen der Erde vertreten. Über 400 Kundenberater stehen weltweit im direkten Kundenkontakt und sorgen flächendeckend für eine individuelle Beratung vor Ort.

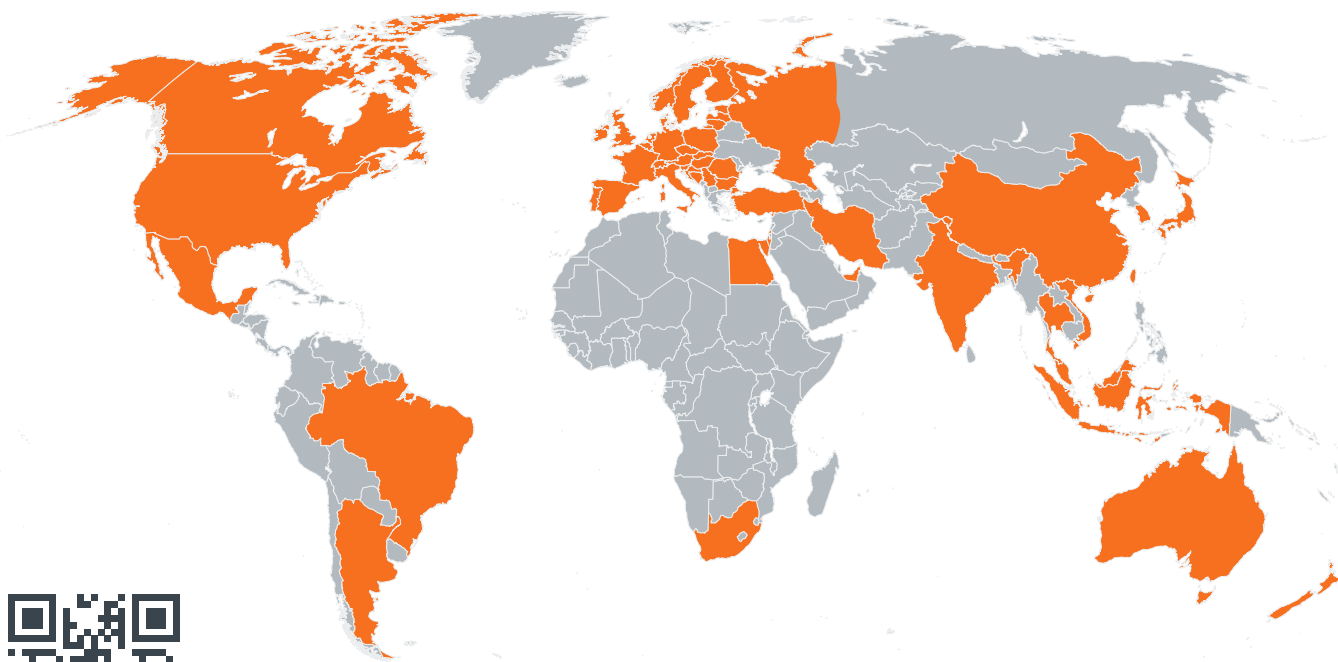
Neben einer anwendungsspezifischen Beratung erarbeiten wir auch Konzepte zur Optimierung Ihres Fertigungsablaufes oder entwickeln eigens für Sie Sonderwerkzeuge.

Ganz gleich, wo unsere Präzisionswerkzeuge und unsere Leistungsvielfalt gefragt sind – wir sind in Ihrer Nähe.

Today EMUGE-FRANKEN is represented in all important industrial nations around the world. More than 400 customer consultants guarantee the direct contact with the customer and provide individual comprehensive consultation on-site.

In addition to offering application-specific advice, we also prepare concepts for optimising your production process or develop special tools specifically for you.

No matter where our precision tools and our range of services are required – we are nearby.



Ihren EMUGE-FRANKEN Ansprechpartner finden Sie auf [www.emuge-franken.com/vertrieb](http://www.emuge-franken.com/vertrieb)  
To find your EMUGE-FRANKEN contact person, please see [www.emuge-franken.com/sales](http://www.emuge-franken.com/sales)

**Immer einen Schritt voraus: Mit Technologien von EMUGE-FRANKEN**

Mit unseren Werkzeugtechnologien nutzen Sie das Entwicklungspotenzial Ihrer Fertigungsprozesse optimal aus und bringen Ihre Zerspanungsprozesse auf ein neues, effizienteres Level.

**Always one step ahead: With technologies from EMUGE-FRANKEN**

Our tool technologies enable you to optimally exploit the development potential of your manufacturing processes and bring your machining processes to a higher, more efficient level.

**EMUGE Taptor®**

**Simultane Erstellung von Kernloch und Gewinde**

Das patentierte Gewindewerkzeug EMUGE Taptor® kombiniert das Vorbohren und die Gewindefertigung in einem Arbeitsschritt und führt bei der Herstellung von Innengewinden in Grund- und Durchgangslöchern zu einer signifikanten Zeiteinsparung.

Dieser Zeitvorteil ergibt sich aus mehreren Faktoren: Zum einen fällt der gesamte Vorbohrzyklus inklusive aller Verfahrens- und Positionierungen, inklusive des Werkzeugwechsels, weg. Zum anderen realisiert die Spannzangen-Aufnahme Speedsynchro Taptor® mit dem integrierten Übersetzungsgetriebe höhere Schnittgeschwindigkeiten und reduziert die Hauptzeit der einzelnen Gewindebearbeitung signifikant.

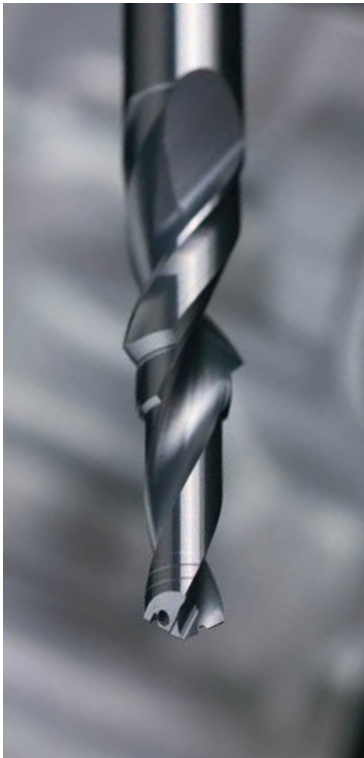
**Simultaneous production of drilled core hole and thread**

The patented EMUGE Taptor® threading tool combines pre-drilling and threading in one work step and leads to significant time savings in the production of internal threads in blind and through-holes.

This time advantage results from several factors: On the one hand, the entire pre-drilling cycle including all traverse paths and positioning, including tool change, is omitted. On the other hand, the Speedsynchro Taptor® collet holder enables higher cutting speeds thanks to its integrated transmission gear and significantly reduces machining main time in the production of threads.

Weitere Informationen siehe Seite 786-787

For more information see page 786-787

**EMUGE PunchDrill**

**Doppelter Bohrvorschub bei gleicher Axialkraft**

Zur Verringerung von Hauptzeiten bietet EMUGE den patentierten PunchDrill an. Mit diesem sind Zeitvorteile von 50 % und mehr in greifbarer Nähe, bei reduzierter oder gleichbleibender Axialkraft.

Geeignet ist der Hochvorschubbohrer zur Bearbeitung von Aluminium- und Magnesium-Gusslegierungen. Eigens neu entwickelte Oberflächenbehandlungen und eine speziell ausgelegte Hartstoffschicht ermöglichen eine sichere Spanabfuhr und erhöhen die Prozesssicherheit.

Ein besonderer Spanteiler hält die abgetragenen Späne kurz und hilft so, die Bearbeitungskräfte zu kontrollieren. Das Werkzeug punktet mit kürzeren Bearbeitungszeiten und einem hohen Zeitspannvolumen.

**Double drilling feed with the same axial force**

EMUGE offers the patented PunchDrill to reduce machining main times. Time savings of 50 % can be achieved with reduced or the same axial force.

The high-feed drill is suitable for machining aluminium and magnesium cast alloys. Newly developed surface treatments and a specially designed hard material layer enable reliable chip removal and increase process reliability.

A special chip divider keeps the chips short and thus helps to control the machining forces. The tool guarantees shorter machining times and a high metal removal rate.

Weitere Informationen siehe Seite 788-789

For more information see page 788-789

## EMUGE PunchTap


**Helikales Gewindeformen  
für neue Dimensionen der Produktivität**

Die patentierte EMUGE PunchTap-Technologie stellt neben Gewindebohren, Gewindeformen und Gewindefräsen eine weitere Technologie zur Herstellung von Innengewinden dar. Mit ihrem innovativen, sehr kurzen Bewegungsablauf eröffnet sie eine völlig neue Dimension der Produktivität.

Das Verfahren ist eine erstaunlich einfache Kinematik in drei Arbeitsschritten: Einfahren, Gewindeformen, Herausfahren. Vergleicht man den Werkzeugweg des EMUGE PunchTap mit dem Werkzeugweg herkömmlicher Gewindebohrer oder Gewindeformer, so fällt dieser bei einem Gewinde M6 mit 15 mm nutzbarer Gewindetiefe circa 15-mal kürzer aus.

Das Ergebnis ist eine deutliche Zeiteinsparung im Gewindezyklus von bis zu 75 %.

Weitere Informationen siehe Seite 790-791

**Helical thread forming  
for new dimensions in productivity**

The patented EMUGE PunchTap technology represents an advanced technology for the production of internal threads in addition to tapping, cold-forming of threads and thread milling. This technology enables a completely new dimension of productivity thanks to its innovative, extremely short motion sequence.

The process consists of an amazingly simple kinematics with three work steps: plunge, thread forming, pull-out. In a comparison of the tool path of the EMUGE PunchTap with the tool path of conventional taps or cold-forming taps, the PunchTap path is about 15 times shorter for an M 6 thread with 15 mm usable thread depth.

The result is a significant time saving of up to 75 % in the threading cycle.

For more information see page 790-791

## EMUGE Werkstück-Spannsysteme · Workpiece clamping systems


**Vielfältiges Know-how  
für anspruchsvolle Aufspannungen**

Beim Spannen von Werkstücken geht es nicht nur um die exakte Fixierung von Bauteilen für die Bearbeitung. Zu den hohen Anforderungen an die Präzision gesellen sich viele weitere Herausforderungen.

Dem begegnet EMUGE mit einem breiten Know-how und insgesamt neun überzeugenden Spannsystemen. Diese finden Sie in unseren ausgeklügelten Spanndornen, Spannfuttern oder stationären Spannmitteln mit mechanischer, pneumatischer oder hydraulischer Betätigung.

Mit unserer Vielfalt an Spannsystemen sind Sie für nahezu jedes Fertigungsverfahren bestens aufgestellt.

Weitere Informationen siehe Seite 792-796

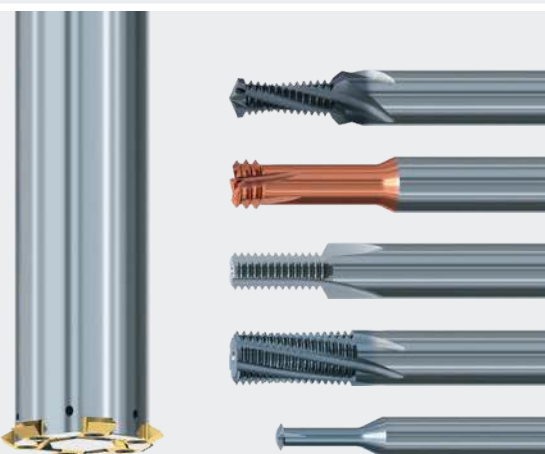
**Wide range of know-how  
for demanding clamping tasks**

Clamping workpieces is not just a matter of precisely clamping components for machining tasks. In addition to the high demands on precision, there are many other challenges.

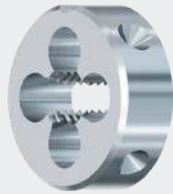
EMUGE meets this challenge with comprehensive know-how and a total of nine convincing clamping systems. They consist of our sophisticated clamping mandrels, clamping chucks or stationary clamping devices with mechanical, pneumatic or hydraulic actuation.

Our wide variety of clamping systems provides you with ideal solutions for almost any manufacturing process.

For more information see page 792-796

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**General Information**


8

EMUGE

Maschinen-Gewindebohrer · Machine Tap

Product Finder

V<sub>c</sub>

M

MF

UNC

UNF

G, Rp

NPT, NPTF

BSW, BSF

Pg

MJ

UNLC, UNLF

EG (STI)

SELF-LOCK

Ti, Ti-F

Zubehör

Accessories

M

DIN 13

DIN 371

Toleranz · Tolerance

Beschichtung · Coating

Schneidstoff · Cutting material

Technische Informationen

Technical information

Gewindetiefe und Lochform

Thread depth and hole type

Einsatzgebiete – Material

Applications – material

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| Ø d <sub>1</sub><br>mm | P<br>mm    | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □          |             |
|------------------------|------------|----------------|----------------|----------------|------------------|------------|-------------|
| <b>M</b>               | <b>1</b>   | <b>0,25</b>    | <b>40</b>      | <b>5</b>       | <b>—</b>         | <b>2,5</b> | <b>2,1</b>  |
|                        | <b>1,1</b> | <b>0,25</b>    | <b>40</b>      | <b>5</b>       | <b>—</b>         | <b>2,5</b> | <b>2,1</b>  |
|                        | <b>1,2</b> | <b>0,25</b>    | <b>40</b>      | <b>5</b>       | <b>—</b>         | <b>2,5</b> | <b>2,1</b>  |
|                        | <b>1,4</b> | <b>0,3</b>     | <b>40</b>      | <b>6</b>       | <b>—</b>         | <b>2,5</b> | <b>2,1</b>  |
|                        | <b>1,6</b> | <b>0,35</b>    | <b>40</b>      | <b>6</b>       | <b>11</b>        | <b>2,5</b> | <b>2,1</b>  |
|                        | <b>1,7</b> | <b>0,35</b>    | <b>40</b>      | <b>6</b>       | <b>11</b>        | <b>2,5</b> | <b>2,1</b>  |
|                        | <b>1,8</b> | <b>0,35</b>    | <b>40</b>      | <b>6</b>       | <b>11</b>        | <b>2,5</b> | <b>2,1</b>  |
|                        | <b>2</b>   | <b>0,4</b>     | <b>45</b>      | <b>7</b>       | <b>12</b>        | <b>2,8</b> | <b>2,1</b>  |
|                        | <b>2,3</b> | <b>0,45</b>    | <b>45</b>      | <b>7</b>       | <b>12</b>        | <b>2,8</b> | <b>2,1</b>  |
|                        | <b>2,5</b> | <b>0,45</b>    | <b>50</b>      | <b>9</b>       | <b>14</b>        | <b>2,8</b> | <b>2,1</b>  |
|                        | <b>2,6</b> | <b>0,45</b>    | <b>50</b>      | <b>9</b>       | <b>14</b>        | <b>2,8</b> | <b>2,1</b>  |
|                        | <b>3</b>   | <b>0,5</b>     | <b>56</b>      | <b>11</b>      | <b>18</b>        | <b>3,5</b> | <b>2,7</b>  |
|                        | <b>3,5</b> | <b>0,6</b>     | <b>56</b>      | <b>12</b>      | <b>20</b>        | <b>4</b>   | <b>3</b>    |
|                        | <b>4</b>   | <b>0,7</b>     | <b>63</b>      | <b>13</b>      | <b>21</b>        | <b>4,5</b> | <b>3,3</b>  |
|                        | <b>4,5</b> | <b>0,75</b>    | <b>70</b>      | <b>14</b>      | <b>25</b>        | <b>6</b>   | <b>4,9</b>  |
|                        | <b>5</b>   | <b>0,8</b>     | <b>70</b>      | <b>15</b>      | <b>25</b>        | <b>6</b>   | <b>4,9</b>  |
|                        | <b>5,5</b> | <b>0,9</b>     | <b>80</b>      | <b>16</b>      | <b>30</b>        | <b>6</b>   | <b>4,9</b>  |
|                        | <b>6</b>   | <b>1</b>       | <b>80</b>      | <b>17</b>      | <b>30</b>        | <b>6</b>   | <b>4,9</b>  |
|                        | <b>7</b>   | <b>1</b>       | <b>80</b>      | <b>17</b>      | <b>30</b>        | <b>7</b>   | <b>5,5</b>  |
|                        | <b>8</b>   | <b>1,25</b>    | <b>90</b>      | <b>20</b>      | <b>35</b>        | <b>8</b>   | <b>6,2</b>  |
|                        | <b>9</b>   | <b>1,25</b>    | <b>90</b>      | <b>20</b>      | <b>35</b>        | <b>9</b>   | <b>7</b>    |
|                        | <b>10</b>  | <b>1,5</b>     | <b>100</b>     | <b>22</b>      | <b>39</b>        | <b>10</b>  | <b>8</b>    |
|                        | <b>12</b>  | <b>1,75</b>    | <b>110</b>     | <b>24</b>      | <b>44</b>        | <b>12</b>  | <b>10,2</b> |

DIN 376

DIN 352

\*) ≤ M1,4 Tol. 4H(X)/5H(X)

6HX \*)

HSSE

C / 2-3

E / O

K 1.1-4.2

N 2.3

Rekord

1A-STEEL

B0101001.0023

STEEL

Steel materials



Mit dem bei den Werkzeugen abgebildeten QR-Code gelangen Sie direkt zu den jeweiligen Artikeln in unserem Webshop. Dort finden Sie umfassende Werkzeuginformationen und Schnittdaten.

Bei Registrierung stehen Ihnen noch weitere Produktdaten und Funktionen zur Verfügung. Dazu zählen neben standardisierten Werkzeugdaten (2D / 3D / Sachmerkmale) auch eine Bestell- oder Angebotshistorie, individuelle Merklisten sowie weitere nützliche Funktionen.

The QR code shown with the tools will take you directly to the respective articles in our web store where you can find comprehensive tool information and cutting data.

Registration provides you with additional product data and functions. These include standardised tool data (2D / 3D / characteristics), an order or quotation history and individual watch lists as well as other useful functions.

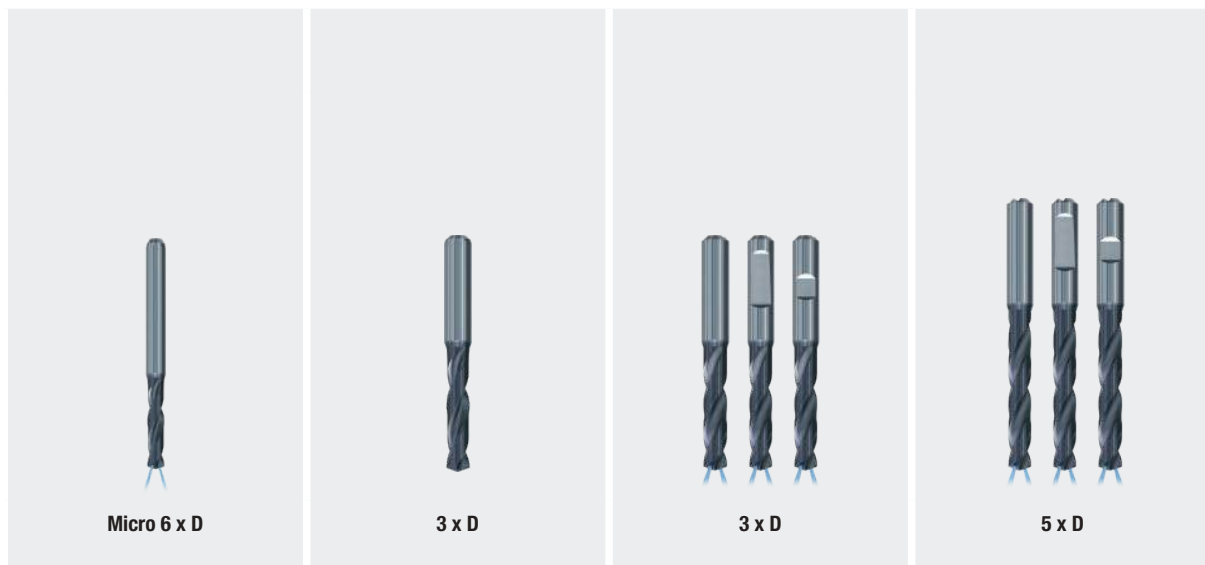


Spiralbohrer  
Twist Drills

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|                        |
|------------------------|
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| $v_c / f$              |
| BASIC                  |
| STEEL                  |
| INOX                   |
| GG                     |
| HCUT                   |
| SpotDrill              |
| Zubehör<br>Accessories |
| 3 x D                  |
| 5 x D                  |
| 6 x D                  |
| 8 x D                  |
| 12 x D                 |
| 2-3,5 x D              |

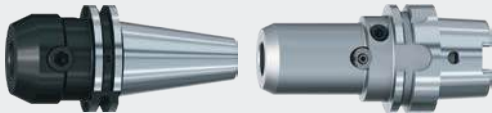


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8 x D



12 x D

Fasbohrer 90°  
Chamfer drill 90°



2 - 3,5 x D

|         |         |    |
|---------|---------|----|
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|         |         |    |
|         |         |    |

| Product Finder         |
|------------------------|
| v <sub>c</sub> / f     |
| BASIC                  |
| STEEL                  |
| INOX                   |
| GG                     |
| HCUT                   |
| SpotDrill              |
| Zubehör<br>Accessories |

|           |
|-----------|
| 3 x D     |
| 5 x D     |
| 6 x D     |
| 8 x D     |
| 12 x D    |
| 2-3,5 x D |

|       |
|-------|
| BASIC |
| STEEL |
| INOX  |
| GG    |
| HCUT  |



## Einsatzempfehlungen und Schnittwerte

### Bitte beachten:

Die in den jeweiligen Spalten angegebenen Schnittwerte sind Richtwerte, welche je nach Einsatzbedingungen (Material, Schmierung, Maschine, usw.) angepasst werden müssen.

v<sub>c</sub> = Schnittgeschwindigkeit [m/min]

f = Vorschub pro Umdrehung [mm/U]

## Application recommendation and cutting data

### Please note:

The cutting values listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.).

v<sub>c</sub> = Cutting speed [m/min]

f = Feed per revolution [mm/rev.]

Internationaler Werkstoffvergleich siehe Seite 764 - 785

International comparison of materials, see page 764 - 785

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|-----------|------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------------|
| 3 x D     |                                                      |                                                                 |                                                                       |                                         |                                                                   |
| 5 x D     |                                                      |                                                                 |                                                                       |                                         |                                                                   |
| 6 x D     |                                                      |                                                                 |                                                                       |                                         |                                                                   |
| 8 x D     |                                                      |                                                                 |                                                                       |                                         |                                                                   |
| 12 x D    |                                                      |                                                                 |                                                                       |                                         |                                                                   |
| 2-3,5 x D |                                                      |                                                                 |                                                                       |                                         |                                                                   |
| P         | <b>Stahlwerkstoffe</b>                               |                                                                 | <b>Steel materials</b>                                                |                                         |                                                                   |
|           | 1.1                                                  | Kaltfließpressstähle, Baustähle, Automatenstähle, u.a.          | Cold-extrusion steels, Construction steels, Free-cutting steels, etc. | ≤ 600 N/mm <sup>2</sup>                 | Cq15 1.1132<br>S235JR (St37-2) 1.0037<br>10SPb20 1.0722           |
|           | 2.1                                                  | Baustähle, Einsatzstähle, Stahlguss, u.a.                       | Construction steels, Cementation steels, Steel castings, etc.         | ≤ 800 N/mm <sup>2</sup>                 | E360 (St70-2) 1.0070<br>16MnCr5 1.7131<br>GS-25CrMo4 1.7218       |
|           | 3.1                                                  | Einsatzstähle, Vergütungsstähle, Kaltarbeitsstähle, u.a.        | Cementation steels, Heat-treatable steels, Cold work steels, etc.     | ≤ 1000 N/mm <sup>2</sup>                | 20MoCr3 1.7320<br>42CrMo4 1.7225<br>102Cr6 1.2067                 |
|           | 4.1                                                  | Vergütungsstähle, Kaltarbeitsstähle, Nitrierstähle, u.a.        | Heat-treatable steels, Cold work steels, Nitriding steels, etc.       | ≤ 1200 N/mm <sup>2</sup>                | 50CrMo4 1.7228<br>X45NiCrMo4 1.2767<br>31CrMo12 1.8515            |
|           | 5.1                                                  | Hochlegierte Stähle, Kaltarbeitsstähle, Warmarbeitsstähle, u.a. | High-alloyed steels, Cold work steels, Hot work steels, etc.          | ≤ 1400 N/mm <sup>2</sup>                | X38CrMoV5-3 1.2367<br>X100CrMoV8-1-1 1.2990<br>X40CrMoV5-1 1.2344 |
| M         | <b>Nichtrostende Stahlwerkstoffe</b>                 |                                                                 | <b>Stainless steel materials</b>                                      |                                         |                                                                   |
|           | 1.1                                                  | Ferritisch, martensitisch                                       | Ferritic, martensitic                                                 | ≤ 950 N/mm <sup>2</sup>                 | X2CrTi12 1.4512                                                   |
|           | 2.1                                                  | Austenitisch                                                    | Austenitic                                                            | ≤ 950 N/mm <sup>2</sup>                 | X6CrNiMoTi17-12-2 1.4571                                          |
|           | 3.1                                                  | Austenitisch-ferritisch (Duplex)                                | Austenitic-ferritic (Duplex)                                          | ≤ 1100 N/mm <sup>2</sup>                | X2CrNiMoN22-5-3 1.4462                                            |
| K         | 4.1                                                  | Austenitisch-ferritisch hitzebeständig (Super Duplex)           | Austenitic-ferritic heat-resistant (Super Duplex)                     | ≤ 1250 N/mm <sup>2</sup>                | X2CrNiMoN25-7-4 1.4410                                            |
|           | <b>Gusswerkstoffe</b>                                |                                                                 | <b>Cast materials</b>                                                 |                                         |                                                                   |
|           | 1.1                                                  | Gusseisen mit Lamellengrafit (GJL)                              | Cast iron with lamellar graphite (GJL)                                | 100-250 N/mm <sup>2</sup>               | EN-GJL-200 (GG20)                                                 |
|           | 1.2                                                  | Gusseisen mit Kugelgrafit (GJS)                                 | Cast iron with nodular graphite (GJS)                                 | 250-450 N/mm <sup>2</sup>               | EN-GJL-300 (GG30)                                                 |
| N         | 2.1                                                  | Gusseisen mit Kugelgrafit (GJS)                                 | Cast iron with nodular graphite (GJS)                                 | 350-500 N/mm <sup>2</sup>               | EN-GJS-400-15 (GGG40)                                             |
|           | 2.2                                                  | Gusseisen mit Kugelgrafit (GJS)                                 | Cast iron with nodular graphite (GJS)                                 | 500-900 N/mm <sup>2</sup>               | EN-GJS-700-2 (GGG70)                                              |
|           | 3.1                                                  | Gusseisen mit Vermiculargrafit (GJV)                            | Cast iron with vermicular graphite (GJV)                              | 300-400 N/mm <sup>2</sup>               | GJV 300                                                           |
|           | 3.2                                                  | Gusseisen mit Vermiculargrafit (GJV)                            | Cast iron with vermicular graphite (GJV)                              | 400-500 N/mm <sup>2</sup>               | GJV 450                                                           |
| N         | 4.1                                                  | Temperguss (GTMW, GTMB)                                         | Malleable cast iron (GTMW, GTMB)                                      | 250-500 N/mm <sup>2</sup>               | EN-GJMW-350-4 (GTW-35)                                            |
|           | 4.2                                                  | Temperguss (GTMW, GTMB)                                         | Malleable cast iron (GTMW, GTMB)                                      | 500-800 N/mm <sup>2</sup>               | EN-GJMB-450-6 (GTS-45)                                            |
| N         | <b>Nichteisenwerkstoffe</b>                          |                                                                 | <b>Non ferrous materials</b>                                          |                                         |                                                                   |
|           | <b>Aluminium-Legierungen</b>                         |                                                                 | <b>Aluminium alloys</b>                                               |                                         |                                                                   |
|           | 1.1                                                  | Aluminium-Knetlegierungen                                       | Aluminium wrought alloys                                              | ≤ 200 N/mm <sup>2</sup>                 | EN AW-AlMn1                                                       |
|           | 1.2                                                  | Aluminium-Knetlegierungen                                       | Aluminium wrought alloys                                              | ≤ 350 N/mm <sup>2</sup>                 | EN AW-AlMgSi                                                      |
| N         | 1.3                                                  | Aluminium-Knetlegierungen                                       | Aluminium wrought alloys                                              | ≤ 550 N/mm <sup>2</sup>                 | EN AW-AlZn5Mg3Cu                                                  |
|           | 1.4                                                  | Aluminium-Knetlegierungen                                       | Aluminium wrought alloys                                              | Si ≤ 7%                                 | EN AC-AlMg5                                                       |
|           | 1.5                                                  | Aluminium-Gusslegierungen                                       | Aluminium cast alloys                                                 | 7% < Si ≤ 12%                           | EN AC-AISi9Cu3                                                    |
|           | 1.6                                                  | Aluminium-Gusslegierungen                                       | Aluminium cast alloys                                                 | 12% < Si ≤ 17%                          | GD-AISI17Cu4FeMg                                                  |
| N         | <b>Kupfer-Legierungen</b>                            |                                                                 | <b>Copper alloys</b>                                                  |                                         |                                                                   |
|           | 2.1                                                  | Reinkupfer, niedriglegiertes Kupfer                             | Pure copper, low-alloyed copper                                       | ≤ 400 N/mm <sup>2</sup>                 | E-Cu 57                                                           |
|           | 2.2                                                  | Kupfer-Zink-Legierungen (Messing, langspanend)                  | Copper-zinc alloys (brass, long-chipping)                             | ≤ 550 N/mm <sup>2</sup>                 | CuZn37 (Ms63)                                                     |
|           | 2.3                                                  | Kupfer-Zink-Legierungen (Messing, kurzspanend)                  | Copper-zinc alloys (brass, short-chipping)                            | ≤ 550 N/mm <sup>2</sup>                 | CuZn36Pb3 (Ms58)                                                  |
| N         | 2.4                                                  | Kupfer-Aluminium-Legierungen (Alubronze, langspanend)           | Copper-aluminium alloys (alu bronze, long-chipping)                   | ≤ 800 N/mm <sup>2</sup>                 | CuAl10Ni5Fe4                                                      |
|           | 2.5                                                  | Kupfer-Zinn-Legierungen (Zinnbronze, langspanend)               | Copper-tin alloys (tin bronze, long-chipping)                         | ≤ 700 N/mm <sup>2</sup>                 | CuSn8P                                                            |
|           | 2.6                                                  | Kupfer-Zinn-Legierungen (Zinnbronze, kurzspanend)               | Copper-tin alloys (tin bronze, short-chipping)                        | ≤ 400 N/mm <sup>2</sup>                 | CuSn7 ZnPb (Rg7)                                                  |
|           | 2.7                                                  | Kupfer-Sonderlegierungen                                        | Special copper alloys                                                 | ≤ 600 N/mm <sup>2</sup>                 | (AMPCO® 8)                                                        |
| N         | 2.8                                                  | Kupfer-Sonderlegierungen                                        | Special copper alloys                                                 | ≤ 1400 N/mm <sup>2</sup>                | (AMPCO® 45)                                                       |
|           | <b>Magnesium-Legierungen</b>                         |                                                                 | <b>Magnesium alloys</b>                                               |                                         |                                                                   |
|           | 3.1                                                  | Magnesium-Knetlegierungen                                       | Magnesium wrought alloys                                              | ≤ 500 N/mm <sup>2</sup>                 | MgAl6Zn                                                           |
|           | 3.2                                                  | Magnesium-Gusslegierungen                                       | Magnesium cast alloys                                                 | ≤ 500 N/mm <sup>2</sup>                 | EN-MCMgAl9Zn1                                                     |
| N         | <b>Kunststoffe</b>                                   |                                                                 | <b>Synthetic</b>                                                      |                                         |                                                                   |
|           | 4.1                                                  | Duroplaste (kurzspanend)                                        | Duroplastics (short-chipping)                                         |                                         | Bakelit, Pertinax                                                 |
|           | 4.2                                                  | Thermoplaste (langspanend)                                      | Thermoplastics (long-chipping)                                        |                                         | PMMA, POM, PVC                                                    |
|           | 4.3                                                  | Faserverstärkte Kunststoffe (Faseranteil ≤ 30%)                 | Fibre-reinforced synthetics (fibre content ≤ 30%)                     |                                         | GFK, CFK, AFK                                                     |
| N         | 4.4                                                  | Faserverstärkte Kunststoffe (Faseranteil > 30%)                 | Fibre-reinforced synthetics (fibre content > 30%)                     |                                         | GFK, CFK, AFK                                                     |
|           | <b>Besondere Werkstoffe</b>                          |                                                                 | <b>Special materials</b>                                              |                                         |                                                                   |
|           | 5.1                                                  | Grafit                                                          | Graphite                                                              |                                         | C 8000                                                            |
|           | 5.2                                                  | Wolfram-Kupfer-Legierungen                                      | Tungsten-copper alloys                                                |                                         | W-Cu 80/20                                                        |
|           | 5.3                                                  | Verbundwerkstoffe                                               | Composite materials                                                   |                                         | Hyllite, Alucobond                                                |
| S         | <b>Spezialwerkstoffe</b>                             |                                                                 | <b>Special materials</b>                                              |                                         |                                                                   |
|           | <b>Titan-Legierungen</b>                             |                                                                 | <b>Titanium alloys</b>                                                |                                         |                                                                   |
|           | 1.1                                                  | Reintitan                                                       | Pure titanium                                                         | ≤ 450 N/mm <sup>2</sup>                 | Ti1                                                               |
|           | 1.2                                                  | Titan-Legierungen                                               | Titanium alloys                                                       | ≤ 900 N/mm <sup>2</sup>                 | TiAl6V4                                                           |
| S         | 1.3                                                  | Titan-Legierungen                                               | Titanium alloys                                                       | ≤ 1250 N/mm <sup>2</sup>                | TiAl4Mo4Sn2                                                       |
|           | <b>Nickel-, Kobalt- und Eisen-Legierungen</b>        |                                                                 | <b>Nickel alloys, cobalt alloys and iron alloys</b>                   |                                         |                                                                   |
|           | 2.1                                                  | Reinnickel                                                      | Pure nickel                                                           | ≤ 600 N/mm <sup>2</sup>                 | Ni 99.6                                                           |
|           | 2.2                                                  | Nickel-Basis-Legierungen                                        | Nickel-base alloys                                                    | ≤ 1000 N/mm <sup>2</sup>                | Monel 400                                                         |
| S         | 2.3                                                  | Nickel-Basis-Legierungen                                        | Nickel-base alloys                                                    | ≤ 1600 N/mm <sup>2</sup>                | Inconel 718                                                       |
|           | 2.4                                                  | Kobalt-Basis-Legierungen                                        | Cobalt-base alloys                                                    | ≤ 1000 N/mm <sup>2</sup>                | Udimet 605                                                        |
|           | 2.5                                                  | Kobalt-Basis-Legierungen                                        | Cobalt-base alloys                                                    | ≤ 1600 N/mm <sup>2</sup>                | Haynes 25                                                         |
|           | 2.6                                                  | Eisen-Basis-Legierungen                                         | Iron-base alloys                                                      | ≤ 1500 N/mm <sup>2</sup>                | Incoloy 800                                                       |
| H         | <b>Harte Werkstoffe</b>                              |                                                                 | <b>Hard materials</b>                                                 |                                         |                                                                   |
|           | 1.1                                                  | Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 44 - 50 HRC                             | Weldox 1100                                                       |
|           | 1.2                                                  | Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 50 - 55 HRC                             | Hardox 550                                                        |
|           | 1.3                                                  | Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 55 - 60 HRC                             | Armox 600T                                                        |
| H         | 1.4                                                  | Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 60 - 63 HRC                             | Ferro-Titanit                                                     |
|           | 1.5                                                  | Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 63 - 66 HRC                             | HSSE                                                              |

# EF-Drill-Micro-STEEL

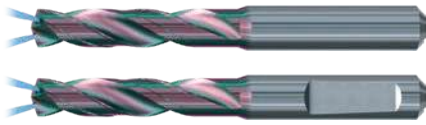


6 x D

|  | v <sub>c</sub> [m/min] |            |      | D = 0,80 mm        |            |       | D = 1,00 mm |            |       | D = 1,25 mm |            |       | D = 1,50 mm |            |       | D = 2,00 mm |            |       | D = 2,50 mm |            |       | D = 3,00 mm |            |       |     |
|--|------------------------|------------|------|--------------------|------------|-------|-------------|------------|-------|-------------|------------|-------|-------------|------------|-------|-------------|------------|-------|-------------|------------|-------|-------------|------------|-------|-----|
|  |                        |            |      | f [mm/U · mm/rev.] |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |     |
|  | min.                   | empf. rec. | max. | min.               | empf. rec. | max.  | min.        | empf. rec. | max.  | min.        | empf. rec. | max.  | min.        | empf. rec. | max.  | min.        | empf. rec. | max.  | min.        | empf. rec. | max.  | min.        | empf. rec. | max.  |     |
|  | 80                     | 90         | 100  | 0,020              | 0,025      | 0,030 | 0,030       | 0,035      | 0,040 | 0,040       | 0,045      | 0,050 | 0,060       | 0,065      | 0,070 | 0,090       | 0,100      | 0,110 | 0,120       | 0,130      | 0,140 | 0,150       | 0,160      | 0,170 | 1.1 |
|  | 70                     | 85         | 100  | 0,020              | 0,025      | 0,030 | 0,030       | 0,035      | 0,040 | 0,040       | 0,045      | 0,050 | 0,060       | 0,065      | 0,070 | 0,090       | 0,100      | 0,110 | 0,120       | 0,130      | 0,140 | 0,150       | 0,160      | 0,170 | 2.1 |
|  | 60                     | 65         | 70   | 0,010              | 0,015      | 0,020 | 0,020       | 0,025      | 0,030 | 0,030       | 0,035      | 0,040 | 0,040       | 0,045      | 0,050 | 0,060       | 0,065      | 0,070 | 0,080       | 0,085      | 0,090 | 0,120       | 0,125      | 0,130 | 3.1 |
|  | 50                     | 55         | 60   | 0,010              | 0,015      | 0,020 | 0,020       | 0,025      | 0,030 | 0,030       | 0,035      | 0,040 | 0,040       | 0,045      | 0,050 | 0,060       | 0,065      | 0,070 | 0,080       | 0,085      | 0,090 | 0,120       | 0,125      | 0,130 | 4.1 |
|  | 45                     | 50         | 55   | 0,010              | 0,015      | 0,020 | 0,020       | 0,025      | 0,030 | 0,030       | 0,035      | 0,040 | 0,040       | 0,045      | 0,050 | 0,060       | 0,065      | 0,070 | 0,080       | 0,085      | 0,090 | 0,120       | 0,125      | 0,130 | 5.1 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |     |
|  | 40                     | 48         | 55   | 0,005              | 0,008      | 0,010 | 0,010       | 0,013      | 0,015 | 0,020       | 0,023      | 0,025 | 0,030       | 0,035      | 0,040 | 0,050       | 0,055      | 0,060 | 0,060       | 0,065      | 0,070 | 0,070       | 0,075      | 0,080 | 1.1 |
|  | 30                     | 35         | 40   | 0,010              | 0,015      | 0,020 | 0,015       | 0,020      | 0,025 | 0,025       | 0,030      | 0,035 | 0,035       | 0,043      | 0,050 | 0,055       | 0,063      | 0,070 | 0,065       | 0,073      | 0,080 | 0,075       | 0,083      | 0,090 | 2.1 |
|  | 30                     | 35         | 40   | 0,005              | 0,008      | 0,010 | 0,010       | 0,013      | 0,015 | 0,020       | 0,023      | 0,025 | 0,030       | 0,035      | 0,040 | 0,050       | 0,055      | 0,060 | 0,060       | 0,065      | 0,070 | 0,070       | 0,075      | 0,080 | 3.1 |
|  | 30                     | 35         | 40   | 0,005              | 0,008      | 0,010 | 0,010       | 0,013      | 0,015 | 0,020       | 0,023      | 0,025 | 0,030       | 0,035      | 0,040 | 0,050       | 0,055      | 0,060 | 0,060       | 0,065      | 0,070 | 0,070       | 0,075      | 0,080 | 4.1 |
|  | 120                    | 145        | 170  | 0,020              | 0,025      | 0,030 | 0,040       | 0,050      | 0,060 | 0,060       | 0,070      | 0,080 | 0,080       | 0,090      | 0,100 | 0,100       | 0,110      | 0,120 | 0,130       | 0,140      | 0,150 | 0,160       | 0,170      | 0,180 | 1.1 |
|  | 120                    | 145        | 170  | 0,020              | 0,025      | 0,030 | 0,040       | 0,050      | 0,060 | 0,060       | 0,070      | 0,080 | 0,080       | 0,090      | 0,100 | 0,100       | 0,110      | 0,120 | 0,130       | 0,140      | 0,150 | 0,160       | 0,170      | 0,180 | 1.2 |
|  | 120                    | 135        | 150  | 0,020              | 0,025      | 0,030 | 0,040       | 0,050      | 0,060 | 0,060       | 0,070      | 0,080 | 0,080       | 0,090      | 0,100 | 0,100       | 0,110      | 0,120 | 0,130       | 0,140      | 0,150 | 0,160       | 0,170      | 0,180 | 2.1 |
|  | 90                     | 105        | 120  | 0,010              | 0,015      | 0,020 | 0,030       | 0,040      | 0,050 | 0,050       | 0,060      | 0,070 | 0,070       | 0,080      | 0,090 | 0,090       | 0,100      | 0,110 | 0,120       | 0,130      | 0,140 | 0,150       | 0,160      | 0,170 | 2.2 |
|  | 60                     | 70         | 80   | 0,020              | 0,025      | 0,030 | 0,030       | 0,040      | 0,050 | 0,040       | 0,050      | 0,060 | 0,050       | 0,060      | 0,070 | 0,070       | 0,080      | 0,090 | 0,090       | 0,100      | 0,110 | 0,110       | 0,120      | 0,130 | 3.1 |
|  | 60                     | 70         | 80   | 0,010              | 0,015      | 0,020 | 0,020       | 0,030      | 0,040 | 0,030       | 0,040      | 0,050 | 0,040       | 0,050      | 0,060 | 0,050       | 0,060      | 0,070 | 0,060       | 0,075      | 0,090 | 0,080       | 0,095      | 0,110 | 3.2 |
|  | 60                     | 70         | 80   | 0,020              | 0,025      | 0,030 | 0,030       | 0,040      | 0,050 | 0,040       | 0,050      | 0,060 | 0,050       | 0,060      | 0,070 | 0,070       | 0,080      | 0,090 | 0,090       | 0,100      | 0,110 | 0,110       | 0,120      | 0,130 | 4.1 |
|  | 60                     | 70         | 80   | 0,010              | 0,015      | 0,020 | 0,020       | 0,030      | 0,040 | 0,030       | 0,040      | 0,050 | 0,040       | 0,050      | 0,060 | 0,050       | 0,060      | 0,070 | 0,060       | 0,075      | 0,090 | 0,080       | 0,095      | 0,110 | 4.2 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |     |
|  | 100                    | 140        | 180  | 0,030              | 0,035      | 0,040 | 0,040       | 0,045      | 0,050 | 0,050       | 0,055      | 0,060 | 0,070       | 0,075      | 0,080 | 0,100       | 0,110      | 0,120 | 0,130       | 0,140      | 0,150 | 0,160       | 0,170      | 0,180 | 1.1 |
|  | 100                    | 140        | 180  | 0,030              | 0,035      | 0,040 | 0,040       | 0,045      | 0,050 | 0,050       | 0,055      | 0,060 | 0,070       | 0,075      | 0,080 | 0,100       | 0,110      | 0,120 | 0,130       | 0,140      | 0,150 | 0,160       | 0,170      | 0,180 | 1.2 |
|  | 100                    | 140        | 180  | 0,030              | 0,035      | 0,040 | 0,040       | 0,045      | 0,050 | 0,050       | 0,055      | 0,060 | 0,070       | 0,075      | 0,080 | 0,100       | 0,110      | 0,120 | 0,130       | 0,140      | 0,150 | 0,160       | 0,170      | 0,180 | 1.3 |
|  | 80                     | 115        | 150  | 0,030              | 0,035      | 0,040 | 0,040       | 0,045      | 0,050 | 0,050       | 0,055      | 0,060 | 0,070       | 0,075      | 0,080 | 0,100       | 0,110      | 0,120 | 0,130       | 0,140      | 0,150 | 0,160       | 0,170      | 0,180 | 1.4 |
|  | 80                     | 115        | 150  | 0,020              | 0,025      | 0,030 | 0,030       | 0,035      | 0,040 | 0,040       | 0,045      | 0,050 | 0,060       | 0,065      | 0,070 | 0,090       | 0,100      | 0,110 | 0,120       | 0,130      | 0,140 | 0,150       | 0,160      | 0,170 | 1.5 |
|  | 80                     | 115        | 150  | 0,020              | 0,025      | 0,030 | 0,030       | 0,035      | 0,040 | 0,040       | 0,045      | 0,050 | 0,060       | 0,065      | 0,070 | 0,090       | 0,100      | 0,110 | 0,120       | 0,130      | 0,140 | 0,150       | 0,160      | 0,170 | 1.6 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 2.1 |
|  | 120                    | 135        | 150  | 0,010              | 0,020      | 0,030 | 0,020       | 0,030      | 0,040 | 0,030       | 0,040      | 0,050 | 0,050       | 0,060      | 0,070 | 0,080       | 0,095      | 0,110 | 0,110       | 0,125      | 0,140 | 0,140       | 0,155      | 0,170 | 2.2 |
|  | 120                    | 135        | 150  | 0,010              | 0,020      | 0,030 | 0,020       | 0,030      | 0,040 | 0,030       | 0,040      | 0,050 | 0,050       | 0,060      | 0,070 | 0,080       | 0,095      | 0,110 | 0,110       | 0,125      | 0,140 | 0,140       | 0,155      | 0,170 | 2.3 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 2.4 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 2.5 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 2.6 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 2.7 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 2.8 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 3.1 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 3.2 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 4.1 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 4.2 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 4.3 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 4.4 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 5.1 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 5.2 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 5.3 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |     |
|  | 20                     | 25         | 30   | 0,010              | 0,015      | 0,020 | 0,010       | 0,015      | 0,020 | 0,025       | 0,030      | 0,035 | 0,030       | 0,040      | 0,050 | 0,040       | 0,050      | 0,060 | 0,055       | 0,065      | 0,075 | 0,065       | 0,075      | 0,085 | 1.1 |
|  | 15                     | 20         | 25   | 0,010              | 0,015      | 0,020 | 0,010       | 0,015      | 0,020 | 0,025       | 0,030      | 0,035 | 0,030       | 0,040      | 0,050 | 0,040       | 0,050      | 0,060 | 0,055       | 0,065      | 0,075 | 0,065       | 0,075      | 0,085 | 1.2 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 1.3 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 2.1 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 2.2 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 2.3 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 2.4 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 2.5 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 2.6 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 1.1 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 1.2 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 1.3 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 1.4 |
|  |                        |            |      |                    |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       |             |            |       | 1.5 |



| BasicDrill-BD101       |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Product Finder         | <div> <div> <div>3 x D</div> <div>5 x D</div> </div> </div> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                        |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                        |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                        |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                        |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| v <sub>c</sub> / f     |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| BASIC                  |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| STEEL                  |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| INOX                   |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| GG                     |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| HCUT                   |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SpotDrill              |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Zubehör<br>Accessories |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                        |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                        |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                        |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                        |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                        |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                        |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                        |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                        |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                        |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                        |                                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



3 x D



5 x D



|  |                        |               |      | D = 3,00 mm        |               |      | D = 5,00 mm |               |      | D = 8,00 mm |               |      | D = 10,00 mm |               |      | D = 12,00 mm |               |      | D = 16,00 mm |               |      | D = 20,00 mm |               |      |     |  |
|--|------------------------|---------------|------|--------------------|---------------|------|-------------|---------------|------|-------------|---------------|------|--------------|---------------|------|--------------|---------------|------|--------------|---------------|------|--------------|---------------|------|-----|--|
|  | v <sub>c</sub> [m/min] |               |      | f [mm/U · mm/rev.] |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |     |  |
|  | min.                   | empf.<br>rec. | max. | min.               | empf.<br>rec. | max. | min.        | empf.<br>rec. | max. | min.        | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. |     |  |
|  | 100                    | 140           | 180  | 0,11               | 0,16          | 0,25 | 0,16        | 0,20          | 0,28 | 0,20        | 0,25          | 0,35 | 0,23         | 0,28          | 0,40 | 0,25         | 0,31          | 0,43 | 0,27         | 0,34          | 0,47 | 0,30         | 0,38          | 0,53 | 1.1 |  |
|  | 80                     | 120           | 160  | 0,11               | 0,16          | 0,25 | 0,16        | 0,20          | 0,28 | 0,20        | 0,25          | 0,35 | 0,23         | 0,28          | 0,40 | 0,25         | 0,31          | 0,43 | 0,27         | 0,34          | 0,47 | 0,30         | 0,38          | 0,53 | 2.1 |  |
|  | 60                     | 80            | 120  | 0,11               | 0,15          | 0,24 | 0,16        | 0,18          | 0,24 | 0,20        | 0,24          | 0,30 | 0,23         | 0,26          | 0,34 | 0,25         | 0,29          | 0,37 | 0,27         | 0,32          | 0,41 | 0,30         | 0,35          | 0,45 | 3.1 |  |
|  | 60                     | 80            | 110  | 0,11               | 0,15          | 0,24 | 0,16        | 0,18          | 0,24 | 0,20        | 0,24          | 0,30 | 0,23         | 0,26          | 0,34 | 0,25         | 0,29          | 0,37 | 0,27         | 0,32          | 0,41 | 0,30         | 0,35          | 0,45 | 4.1 |  |
|  | 60                     | 75            | 100  | 0,10               | 0,13          | 0,21 | 0,13        | 0,17          | 0,24 | 0,17        | 0,21          | 0,30 | 0,19         | 0,24          | 0,34 | 0,21         | 0,26          | 0,37 | 0,22         | 0,28          | 0,39 | 0,25         | 0,31          | 0,44 | 5.1 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 1.1 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 2.1 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 3.1 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 4.1 |  |
|  | 135                    | 155           | 175  | 0,11               | 0,16          | 0,25 | 0,16        | 0,20          | 0,28 | 0,20        | 0,25          | 0,35 | 0,23         | 0,28          | 0,40 | 0,25         | 0,31          | 0,43 | 0,27         | 0,34          | 0,47 | 0,30         | 0,38          | 0,53 | 1.1 |  |
|  | 125                    | 145           | 165  | 0,11               | 0,16          | 0,25 | 0,16        | 0,20          | 0,28 | 0,20        | 0,25          | 0,35 | 0,23         | 0,28          | 0,40 | 0,25         | 0,31          | 0,43 | 0,27         | 0,34          | 0,47 | 0,30         | 0,38          | 0,53 | 1.2 |  |
|  | 155                    | 175           | 195  | 0,11               | 0,16          | 0,25 | 0,16        | 0,20          | 0,28 | 0,20        | 0,25          | 0,35 | 0,23         | 0,28          | 0,40 | 0,25         | 0,31          | 0,43 | 0,27         | 0,34          | 0,47 | 0,30         | 0,38          | 0,53 | 2.1 |  |
|  | 115                    | 135           | 155  | 0,11               | 0,15          | 0,24 | 0,16        | 0,18          | 0,24 | 0,20        | 0,24          | 0,30 | 0,23         | 0,26          | 0,34 | 0,25         | 0,29          | 0,37 | 0,27         | 0,32          | 0,41 | 0,30         | 0,35          | 0,45 | 2.2 |  |
|  | 95                     | 115           | 135  | 0,11               | 0,16          | 0,25 | 0,16        | 0,20          | 0,28 | 0,20        | 0,25          | 0,35 | 0,23         | 0,28          | 0,40 | 0,25         | 0,31          | 0,43 | 0,27         | 0,34          | 0,47 | 0,30         | 0,38          | 0,53 | 3.1 |  |
|  | 75                     | 95            | 115  | 0,10               | 0,14          | 0,22 | 0,14        | 0,18          | 0,25 | 0,18        | 0,23          | 0,32 | 0,20         | 0,25          | 0,36 | 0,22         | 0,28          | 0,39 | 0,24         | 0,30          | 0,43 | 0,27         | 0,34          | 0,47 | 3.2 |  |
|  | 115                    | 135           | 155  | 0,11               | 0,15          | 0,24 | 0,16        | 0,18          | 0,24 | 0,20        | 0,24          | 0,30 | 0,23         | 0,26          | 0,34 | 0,25         | 0,29          | 0,37 | 0,27         | 0,32          | 0,41 | 0,30         | 0,32          | 0,41 | 4.1 |  |
|  | 105                    | 125           | 145  | 0,10               | 0,14          | 0,22 | 0,14        | 0,18          | 0,25 | 0,18        | 0,23          | 0,32 | 0,20         | 0,25          | 0,36 | 0,22         | 0,28          | 0,39 | 0,24         | 0,30          | 0,43 | 0,27         | 0,30          | 0,43 | 4.2 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 1.1 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 1.2 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 1.3 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 1.4 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 1.5 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 1.6 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 2.1 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 2.2 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 2.3 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 2.4 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 2.5 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 2.6 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 2.7 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 2.8 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 3.1 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 3.2 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 4.1 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 4.2 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 4.3 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 4.4 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 5.1 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 5.2 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 5.3 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |     |  |
|  | 40                     | 50            | 60   | 0,04               | 0,05          | 0,06 | 0,06        | 0,08          | 0,10 | 0,10        | 0,12          | 0,15 | 0,11         | 0,13          | 0,17 | 0,12         | 0,14          | 0,19 | 0,14         | 0,16          | 0,20 | 0,16         | 0,18          | 0,22 | 1.1 |  |
|  | 30                     | 40            | 50   | 0,04               | 0,05          | 0,06 | 0,06        | 0,08          | 0,10 | 0,10        | 0,12          | 0,15 | 0,11         | 0,13          | 0,17 | 0,12         | 0,14          | 0,19 | 0,14         | 0,16          | 0,20 | 0,16         | 0,18          | 0,22 | 1.2 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 1.3 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 2.1 |  |
|  | 20                     | 40            | 60   | 0,04               | 0,05          | 0,07 | 0,06        | 0,08          | 0,11 | 0,10        | 0,13          | 0,20 | 0,11         | 0,15          | 0,23 | 0,12         | 0,17          | 0,25 | 0,14         | 0,18          | 0,27 | 0,16         | 0,20          | 0,29 | 2.2 |  |
|  | 10                     | 25            | 40   | 0,04               | 0,05          | 0,07 | 0,06        | 0,08          | 0,10 | 0,10        | 0,12          | 0,15 | 0,11         | 0,13          | 0,17 | 0,12         | 0,14          | 0,19 | 0,14         | 0,16          | 0,20 | 0,16         | 0,18          | 0,22 | 2.3 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 2.4 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 2.5 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 2.6 |  |
|  | 20                     | 40            | 50   | 0,05               | 0,06          | 0,11 | 0,08        | 0,11          | 0,16 | 0,10        | 0,16          | 0,25 | 0,11         | 0,18          | 0,28 | 0,12         | 0,19          | 0,31 | 0,14         | 0,20          | 0,34 | 0,16         | 0,22          | 0,44 | 1.1 |  |
|  | 20                     | 30            | 50   | 0,05               | 0,06          | 0,11 | 0,08        | 0,11          | 0,16 | 0,10        | 0,16          | 0,25 | 0,11         | 0,18          | 0,28 | 0,12         | 0,19          | 0,31 | 0,14         | 0,20          | 0,34 | 0,16         | 0,22          | 0,44 | 1.2 |  |
|  | 20                     | 30            | 50   | 0,05               | 0,06          | 0,11 | 0,08        | 0,11          | 0,16 | 0,10        | 0,16          | 0,25 | 0,11         | 0,18          | 0,28 | 0,12         | 0,19          | 0,31 | 0,14         | 0,20          | 0,34 | 0,16         | 0,22          | 0,44 | 1.3 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 1.4 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      | 1.5 |  |



[illegible]



12 x D

Product  
Finder $v_c / f$ 

BASIC

STEEL

INOX

G

HCUT

SpotDrill

Zubehör  
Accessories

3 x D

5 x D

6 x D

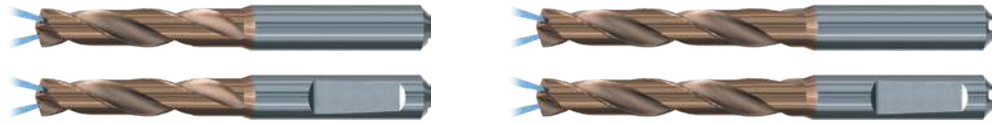
8 x D

12 x D

2-3,5 x D



|  |                        |               |      | D = 3,00 mm        |               |      | D = 5,00 mm |               |      | D = 8,00 mm |               |      | D = 10,00 mm |               |      | D = 12,00 mm |               |      | D = 16,00 mm |               |      |     |
|--|------------------------|---------------|------|--------------------|---------------|------|-------------|---------------|------|-------------|---------------|------|--------------|---------------|------|--------------|---------------|------|--------------|---------------|------|-----|
|  | v <sub>c</sub> [m/min] |               |      | f [mm/U · mm/rev.] |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |     |
|  | min.                   | empf.<br>rec. | max. | min.               | empf.<br>rec. | max. | min.        | empf.<br>rec. | max. | min.        | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. |     |
|  | 80                     | 100           | 120  | 0,07               | 0,09          | 0,11 | 0,12        | 0,14          | 0,16 | 0,16        | 0,18          | 0,20 | 0,18         | 0,20          | 0,22 | 0,20         | 0,22          | 0,24 | 0,23         | 0,25          | 0,27 | 1.1 |
|  | 70                     | 90            | 110  | 0,07               | 0,09          | 0,11 | 0,12        | 0,14          | 0,16 | 0,16        | 0,18          | 0,20 | 0,18         | 0,20          | 0,22 | 0,20         | 0,22          | 0,24 | 0,23         | 0,25          | 0,27 | 2.1 |
|  | 60                     | 80            | 100  | 0,08               | 0,10          | 0,12 | 0,11        | 0,13          | 0,15 | 0,18        | 0,20          | 0,22 | 0,19         | 0,21          | 0,23 | 0,21         | 0,23          | 0,25 | 0,26         | 0,28          | 0,30 | 3.1 |
|  | 55                     | 75            | 95   | 0,06               | 0,08          | 0,10 | 0,09        | 0,11          | 0,13 | 0,16        | 0,18          | 0,20 | 0,18         | 0,20          | 0,22 | 0,20         | 0,22          | 0,24 | 0,24         | 0,26          | 0,28 | 4.1 |
|  | 45                     | 55            | 65   | 0,04               | 0,06          | 0,08 | 0,07        | 0,09          | 0,11 | 0,14        | 0,16          | 0,18 | 0,16         | 0,18          | 0,20 | 0,18         | 0,20          | 0,22 | 0,21         | 0,23          | 0,25 | 5.1 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |     |
|  | 40                     | 60            | 80   | 0,04               | 0,06          | 0,08 | 0,07        | 0,09          | 0,11 | 0,10        | 0,12          | 0,14 | 0,13         | 0,15          | 0,17 | 0,14         | 0,16          | 0,18 | 0,16         | 0,18          | 0,20 | 1.1 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               | 2.1  |     |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               | 3.1  |     |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               | 4.1  |     |
|  | 115                    | 140           | 165  | 0,10               | 0,12          | 0,14 | 0,17        | 0,19          | 0,21 | 0,26        | 0,28          | 0,30 | 0,31         | 0,33          | 0,35 | 0,34         | 0,36          | 0,38 | 0,41         | 0,43          | 0,45 | 1.1 |
|  | 95                     | 125           | 140  | 0,10               | 0,12          | 0,14 | 0,16        | 0,18          | 0,20 | 0,27        | 0,29          | 0,31 | 0,30         | 0,32          | 0,34 | 0,33         | 0,35          | 0,37 | 0,39         | 0,41          | 0,43 | 1.2 |
|  | 95                     | 125           | 150  | 0,11               | 0,13          | 0,15 | 0,17        | 0,19          | 0,21 | 0,25        | 0,27          | 0,29 | 0,29         | 0,31          | 0,33 | 0,32         | 0,34          | 0,36 | 0,38         | 0,40          | 0,42 | 2.1 |
|  | 105                    | 125           | 140  | 0,09               | 0,11          | 0,13 | 0,15        | 0,17          | 0,19 | 0,21        | 0,23          | 0,25 | 0,24         | 0,26          | 0,28 | 0,26         | 0,28          | 0,30 | 0,32         | 0,34          | 0,36 | 2.2 |
|  | 70                     | 90            | 110  | 0,10               | 0,12          | 0,14 | 0,16        | 0,18          | 0,20 | 0,24        | 0,26          | 0,28 | 0,26         | 0,28          | 0,30 | 0,29         | 0,31          | 0,33 | 0,35         | 0,37          | 0,39 | 3.1 |
|  | 60                     | 80            | 100  | 0,09               | 0,11          | 0,13 | 0,12        | 0,14          | 0,16 | 0,19        | 0,21          | 0,23 | 0,21         | 0,23          | 0,25 | 0,23         | 0,25          | 0,27 | 0,28         | 0,30          | 0,32 | 3.2 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 4.1 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 4.2 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |     |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 1.1 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 1.2 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 1.3 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 1.4 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 1.5 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 1.6 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 2.1 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 2.2 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 2.3 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 2.4 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 2.5 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 2.6 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 2.7 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 2.8 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 3.1 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 3.2 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 4.1 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 4.2 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 4.3 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 4.4 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 5.1 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 5.2 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 5.3 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 1.1 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 1.2 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 1.3 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 2.1 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 2.2 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 2.3 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 2.4 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 2.5 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 2.6 |
|  | 15                     | 25            | 35   | 0,02               | 0,04          | 0,06 | 0,05        | 0,07          | 0,09 | 0,07        | 0,09          | 0,11 | 0,07         | 0,09          | 0,11 | 0,09         | 0,11          | 0,13 | 0,11         | 0,13          | 0,15 | 1.1 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 1.2 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 1.3 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 1.4 |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      | 1.5 |

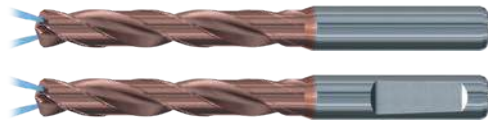


3 x D

5 x D



|     |     | v <sub>c</sub> [m/min] |               |      | D = 3,00 mm        |               |      | D = 5,00 mm |               |      | D = 8,00 mm |               |      | D = 10,00 mm |               |      | D = 12,00 mm |               |      | D = 16,00 mm |               |      | D = 20,00 mm |               |      |
|-----|-----|------------------------|---------------|------|--------------------|---------------|------|-------------|---------------|------|-------------|---------------|------|--------------|---------------|------|--------------|---------------|------|--------------|---------------|------|--------------|---------------|------|
|     |     |                        |               |      | f [mm/U · mm/rev.] |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     |     | min.                   | empf.<br>rec. | max. | min.               | empf.<br>rec. | max. | min.        | empf.<br>rec. | max. | min.        | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. |
| P   | 1.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 3.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 4.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 5.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| M   | 1.1 | 40                     | <b>60</b>     | 80   | 0,04               | <b>0,06</b>   | 0,09 | 0,09        | <b>0,12</b>   | 0,19 | 0,11        | <b>0,17</b>   | 0,26 | 0,14         | <b>0,19</b>   | 0,30 | 0,15         | <b>0,21</b>   | 0,33 | 0,16         | <b>0,23</b>   | 0,36 | 0,18         | <b>0,25</b>   | 0,38 |
|     | 2.1 | 40                     | <b>55</b>     | 75   | 0,04               | <b>0,05</b>   | 0,08 | 0,08        | <b>0,11</b>   | 0,16 | 0,10        | <b>0,15</b>   | 0,20 | 0,14         | <b>0,18</b>   | 0,27 | 0,15         | <b>0,20</b>   | 0,30 | 0,16         | <b>0,22</b>   | 0,32 | 0,18         | <b>0,24</b>   | 0,34 |
|     | 3.1 | 40                     | <b>50</b>     | 70   | 0,04               | <b>0,05</b>   | 0,08 | 0,08        | <b>0,11</b>   | 0,16 | 0,10        | <b>0,15</b>   | 0,20 | 0,14         | <b>0,18</b>   | 0,27 | 0,15         | <b>0,20</b>   | 0,30 | 0,16         | <b>0,22</b>   | 0,32 | 0,18         | <b>0,24</b>   | 0,34 |
|     | 4.1 | 30                     | <b>40</b>     | 60   | 0,04               | <b>0,05</b>   | 0,08 | 0,08        | <b>0,11</b>   | 0,16 | 0,10        | <b>0,15</b>   | 0,20 | 0,14         | <b>0,18</b>   | 0,27 | 0,15         | <b>0,20</b>   | 0,30 | 0,16         | <b>0,22</b>   | 0,32 | 0,18         | <b>0,24</b>   | 0,34 |
| K   | 1.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 3.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 3.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 4.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 4.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| N   | 1.1 | 160                    | <b>180</b>    | 240  | 0,14               | <b>0,19</b>   | 0,31 | 0,19        | <b>0,28</b>   | 0,38 | 0,24        | <b>0,33</b>   | 0,42 | 0,27         | <b>0,37</b>   | 0,47 | 0,30         | <b>0,41</b>   | 0,52 | 0,32         | <b>0,45</b>   | 0,57 | 0,34         | <b>0,47</b>   | 0,59 |
|     | 1.2 | 160                    | <b>180</b>    | 240  | 0,14               | <b>0,19</b>   | 0,31 | 0,19        | <b>0,28</b>   | 0,38 | 0,24        | <b>0,33</b>   | 0,42 | 0,27         | <b>0,37</b>   | 0,47 | 0,30         | <b>0,41</b>   | 0,52 | 0,32         | <b>0,45</b>   | 0,57 | 0,34         | <b>0,47</b>   | 0,59 |
|     | 1.3 | 160                    | <b>180</b>    | 240  | 0,14               | <b>0,19</b>   | 0,31 | 0,19        | <b>0,28</b>   | 0,38 | 0,24        | <b>0,33</b>   | 0,42 | 0,27         | <b>0,37</b>   | 0,47 | 0,30         | <b>0,41</b>   | 0,52 | 0,32         | <b>0,45</b>   | 0,57 | 0,34         | <b>0,47</b>   | 0,59 |
|     | 1.4 | 160                    | <b>180</b>    | 240  | 0,14               | <b>0,19</b>   | 0,31 | 0,19        | <b>0,28</b>   | 0,38 | 0,24        | <b>0,33</b>   | 0,42 | 0,27         | <b>0,37</b>   | 0,47 | 0,30         | <b>0,41</b>   | 0,52 | 0,32         | <b>0,45</b>   | 0,57 | 0,34         | <b>0,47</b>   | 0,59 |
|     | 1.5 | 160                    | <b>180</b>    | 240  | 0,14               | <b>0,19</b>   | 0,31 | 0,19        | <b>0,28</b>   | 0,38 | 0,24        | <b>0,33</b>   | 0,42 | 0,27         | <b>0,37</b>   | 0,47 | 0,30         | <b>0,41</b>   | 0,52 | 0,32         | <b>0,45</b>   | 0,57 | 0,34         | <b>0,47</b>   | 0,59 |
|     | 1.6 | 160                    | <b>180</b>    | 240  | 0,14               | <b>0,19</b>   | 0,31 | 0,19        | <b>0,28</b>   | 0,38 | 0,24        | <b>0,33</b>   | 0,42 | 0,27         | <b>0,37</b>   | 0,47 | 0,30         | <b>0,41</b>   | 0,52 | 0,32         | <b>0,45</b>   | 0,57 | 0,34         | <b>0,47</b>   | 0,59 |
|     | 2.1 | 120                    | <b>140</b>    | 180  | 0,03               | <b>0,05</b>   | 0,07 | 0,04        | <b>0,06</b>   | 0,08 | 0,05        | <b>0,10</b>   | 0,13 | 0,06         | <b>0,12</b>   | 0,14 | 0,06         | <b>0,14</b>   | 0,16 | 0,07         | <b>0,15</b>   | 0,17 | 0,09         | <b>0,18</b>   | 0,20 |
|     | 2.2 | 120                    | <b>140</b>    | 180  | 0,03               | <b>0,05</b>   | 0,07 | 0,04        | <b>0,06</b>   | 0,08 | 0,05        | <b>0,10</b>   | 0,13 | 0,06         | <b>0,12</b>   | 0,14 | 0,06         | <b>0,14</b>   | 0,16 | 0,07         | <b>0,15</b>   | 0,17 | 0,09         | <b>0,18</b>   | 0,20 |
|     | 2.3 | 120                    | <b>140</b>    | 180  | 0,11               | <b>0,14</b>   | 0,19 | 0,17        | <b>0,22</b>   | 0,30 | 0,22        | <b>0,28</b>   | 0,39 | 0,25         | <b>0,31</b>   | 0,42 | 0,27         | <b>0,33</b>   | 0,44 | 0,30         | <b>0,36</b>   | 0,48 | 0,33         | <b>0,39</b>   | 0,51 |
|     | 2.4 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.5 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.6 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.7 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.8 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 3.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 3.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 4.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 4.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 4.3 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 4.4 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| 5.1 |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| 5.2 |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| 5.3 |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| S   | 1.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.2 | 40                     | <b>50</b>     | 60   | 0,04               | <b>0,05</b>   | 0,06 | 0,06        | <b>0,08</b>   | 0,10 | 0,10        | <b>0,12</b>   | 0,15 | 0,11         | <b>0,13</b>   | 0,17 | 0,12         | <b>0,14</b>   | 0,19 | 0,14         | <b>0,16</b>   | 0,20 | 0,16         | <b>0,18</b>   | 0,22 |
|     | 1.3 | 30                     | <b>40</b>     | 50   | 0,04               | <b>0,05</b>   | 0,06 | 0,06        | <b>0,08</b>   | 0,10 | 0,10        | <b>0,12</b>   | 0,15 | 0,11         | <b>0,13</b>   | 0,17 | 0,12         | <b>0,14</b>   | 0,19 | 0,14         | <b>0,16</b>   | 0,20 | 0,16         | <b>0,18</b>   | 0,22 |
|     | 2.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.2 | 20                     | <b>40</b>     | 60   | 0,04               | <b>0,05</b>   | 0,07 | 0,06        | <b>0,08</b>   | 0,11 | 0,10        | <b>0,13</b>   | 0,20 | 0,11         | <b>0,15</b>   | 0,23 | 0,12         | <b>0,17</b>   | 0,25 | 0,14         | <b>0,18</b>   | 0,27 | 0,16         | <b>0,20</b>   | 0,29 |
|     | 2.3 | 10                     | <b>25</b>     | 40   | 0,04               | <b>0,05</b>   | 0,07 | 0,06        | <b>0,08</b>   | 0,10 | 0,10        | <b>0,12</b>   | 0,15 | 0,11         | <b>0,13</b>   | 0,17 | 0,12         | <b>0,14</b>   | 0,19 | 0,14         | <b>0,16</b>   | 0,20 | 0,16         | <b>0,18</b>   | 0,22 |
|     | 2.4 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| 2.5 |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| 2.6 |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| H   | 1.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.3 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.4 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.5 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |



5 x D

Product  
Finder $v_c / f$ 

BASIC

STEEL

INOX

G

HCUT

SpotDrill

Zubehör  
Accessories

3 x D

5 x D

6 x D

8 x D

12 x D

2-3,5 x D



|  |                        |               |      | D = 3,00 mm        |               |      | D = 5,00 mm |               |      | D = 8,00 mm |               |      | D = 10,00 mm |               |      | D = 12,00 mm |               |      | D = 16,00 mm |               |      | D = 20,00 mm |               |      |     |  |
|--|------------------------|---------------|------|--------------------|---------------|------|-------------|---------------|------|-------------|---------------|------|--------------|---------------|------|--------------|---------------|------|--------------|---------------|------|--------------|---------------|------|-----|--|
|  | v <sub>c</sub> [m/min] |               |      | f [mm/U · mm/rev.] |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |     |  |
|  | min.                   | empf.<br>rec. | max. | min.               | empf.<br>rec. | max. | min.        | empf.<br>rec. | max. | min.        | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | P    |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 1.1  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 2.1  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 3.1  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 4.1  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 5.1  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 1.1  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 2.1  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 3.1  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 4.1  |     |  |
|  | 140                    | 180           | 210  | 0,12               | 0,16          | 0,20 | 0,17        | 0,22          | 0,26 | 0,24        | 0,30          | 0,34 | 0,27         | 0,33          | 0,39 | 0,30         | 0,36          | 0,46 | 0,35         | 0,41          | 0,52 | 0,39         | 0,45          | 0,56 | 1.1 |  |
|  | 120                    | 150           | 180  | 0,10               | 0,13          | 0,16 | 0,15        | 0,19          | 0,23 | 0,20        | 0,26          | 0,32 | 0,23         | 0,29          | 0,35 | 0,26         | 0,34          | 0,42 | 0,32         | 0,38          | 0,50 | 0,36         | 0,42          | 0,54 | 1.2 |  |
|  | 120                    | 150           | 190  | 0,10               | 0,14          | 0,17 | 0,15        | 0,20          | 0,24 | 0,21        | 0,27          | 0,33 | 0,24         | 0,30          | 0,36 | 0,27         | 0,35          | 0,43 | 0,33         | 0,39          | 0,51 | 0,37         | 0,43          | 0,55 | 2.1 |  |
|  | 110                    | 130           | 150  | 0,09               | 0,12          | 0,15 | 0,13        | 0,17          | 0,21 | 0,16        | 0,22          | 0,28 | 0,18         | 0,23          | 0,29 | 0,20         | 0,27          | 0,32 | 0,24         | 0,31          | 0,37 | 0,28         | 0,35          | 0,41 | 2.2 |  |
|  | 80                     | 100           | 110  | 0,10               | 0,12          | 0,14 | 0,13        | 0,15          | 0,19 | 0,17        | 0,21          | 0,26 | 0,21         | 0,26          | 0,31 | 0,27         | 0,32          | 0,37 | 0,32         | 0,37          | 0,41 | 0,36         | 0,41          | 0,45 | 3.1 |  |
|  | 80                     | 100           | 110  | 0,10               | 0,12          | 0,14 | 0,13        | 0,15          | 0,19 | 0,17        | 0,21          | 0,26 | 0,21         | 0,26          | 0,31 | 0,27         | 0,32          | 0,37 | 0,32         | 0,37          | 0,41 | 0,36         | 0,41          | 0,45 | 3.2 |  |
|  | 130                    | 150           | 180  | 0,10               | 0,13          | 0,16 | 0,14        | 0,17          | 0,21 | 0,18        | 0,24          | 0,30 | 0,22         | 0,30          | 0,34 | 0,24         | 0,32          | 0,40 | 0,28         | 0,38          | 0,46 | 0,32         | 0,42          | 0,50 | 4.1 |  |
|  | 110                    | 130           | 150  | 0,09               | 0,12          | 0,15 | 0,12        | 0,16          | 0,20 | 0,16        | 0,21          | 0,27 | 0,20         | 0,27          | 0,31 | 0,22         | 0,29          | 0,36 | 0,27         | 0,34          | 0,42 | 0,31         | 0,38          | 0,46 | 4.2 |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 1.1  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 1.2  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 1.3  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 1.4  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 1.5  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 1.6  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 2.1  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 2.2  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 2.3  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 2.4  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 2.5  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 2.6  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 2.7  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 2.8  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 3.1  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 3.2  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 4.1  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 4.2  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 4.3  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 4.4  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 5.1  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               | 5.2  |     |  |
|  |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |     |  |

# EF-Drill-HCUT

- Product Finder
- $v_c / f$
- BASIC
- STEEL
- INOX
- GG
- HCUT
- SpotDrill
- Zubehör Accessories



3 x D

- 3 x D
- 5 x D
- 6 x D
- 8 x D
- 12 x D
- 2-3,5 x D



|     |     | v <sub>c</sub> [m/min] |               |      | D = 3,00 mm        |               |      | D = 5,00 mm |               |      | D = 8,00 mm |               |      | D = 10,00 mm |               |      | D = 12,00 mm |               |      | D = 16,00 mm |               |      | D = 20,00 mm |               |      |
|-----|-----|------------------------|---------------|------|--------------------|---------------|------|-------------|---------------|------|-------------|---------------|------|--------------|---------------|------|--------------|---------------|------|--------------|---------------|------|--------------|---------------|------|
|     |     |                        |               |      | f [mm/U · mm/rev.] |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     |     | min.                   | empf.<br>rec. | max. | min.               | empf.<br>rec. | max. | min.        | empf.<br>rec. | max. | min.        | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. | min.         | empf.<br>rec. | max. |
| P   | 1.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 3.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 4.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 5.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| M   |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 3.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| K   | 4.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 3.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 3.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 4.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 4.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| N   |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.3 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.4 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.5 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.6 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.3 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.4 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.5 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.6 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.7 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.8 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 3.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 3.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 4.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 4.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 4.3 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| 4.4 |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| 5.1 |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| 5.2 |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| 5.3 |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| S   |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.3 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.1 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 2.2 |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| 2.3 |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| 2.4 |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| 2.5 |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| 2.6 |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
| H   |     |                        |               |      |                    |               |      |             |               |      |             |               |      |              |               |      |              |               |      |              |               |      |              |               |      |
|     | 1.1 | 30                     | 35            | 40   | 0,03               | 0,05          | 0,06 | 0,04        | 0,06          | 0,07 | 0,08        | 0,10          | 0,12 | 0,10         | 0,12          | 0,14 | 0,12         | 0,14          | 0,16 | 0,14         | 0,16          | 0,18 | 0,18         | 0,20          | 0,22 |
|     | 1.2 | 20                     | 25            | 30   | 0,03               | 0,05          | 0,06 | 0,04        | 0,06          | 0,07 | 0,08        | 0,10          | 0,12 | 0,10         | 0,12          | 0,14 | 0,12         | 0,14          | 0,16 | 0,14         | 0,16          | 0,18 | 0,18         | 0,20          | 0,22 |
|     | 1.3 | 15                     | 20            | 25   | 0,03               | 0,04          | 0,05 | 0,03        | 0,04          | 0,05 | 0,04        | 0,06          | 0,08 | 0,06         | 0,08          | 0,10 | 0,06         | 0,08          | 0,10 | 0,08         | 0,10          | 0,12 | 0,12         | 0,14          | 0,16 |
|     | 1.4 | 10                     | 15            | 20   | 0,02               | 0,03          | 0,04 | 0,03        | 0,04          | 0,05 | 0,03        | 0,04          | 0,05 | 0,04         | 0,05          | 0,06 | 0,04         | 0,05          | 0,06 | 0,05         | 0,06          | 0,07 | 0,09         | 0,10          | 0,11 |
| 1.5 | 8   | 12                     | 15            | 0,01 | 0,02               | 0,03          | 0,02 | 0,03        | 0,04          | 0,03 | 0,04        | 0,05          | 0,04 | 0,05         | 0,06          | 0,04 | 0,05         | 0,06          | 0,05 | 0,06         | 0,07          | 0,09 | 0,10         | 0,11          |      |



## EF-Drill C-STEEL



2 - 3,5 x D

## NC SpotDrill



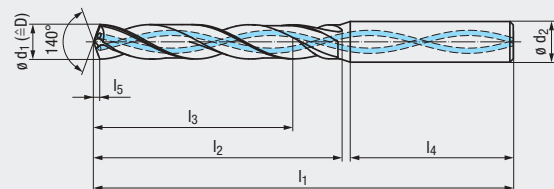
142°

|  |     |     | D = 3,00 mm            |            |      | D = 5,00 mm        |            |      | D = 8,00 mm |            |      | D = 10,00 mm |            |      | D = 12,00 mm |            |      | D = 16,00 mm |            |      |      |            |      | d ≤ 6 mm |            |      | d > 6 mm |            |      |      |      |     |
|--|-----|-----|------------------------|------------|------|--------------------|------------|------|-------------|------------|------|--------------|------------|------|--------------|------------|------|--------------|------------|------|------|------------|------|----------|------------|------|----------|------------|------|------|------|-----|
|  |     |     | v <sub>c</sub> [m/min] |            |      | f [mm/U · mm/rev.] |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     | min.                   | empf. rec. | max. | min.               | empf. rec. | max. | min.        | empf. rec. | max. | min.         | empf. rec. | max. | min.         | empf. rec. | max. | min.         | empf. rec. | max. | min. | empf. rec. | max. | min.     | empf. rec. | max. | min.     | empf. rec. | max. |      |      |     |
|  | 140 | 160 | 200                    | 0,08       | 0,11 | 0,13               | 0,11       | 0,15 | 0,19        | 0,14       | 0,18 | 0,25         | 0,20       | 0,24 | 0,29         | 0,22       | 0,25 | 0,32         | 0,25       | 0,31 | 0,38 |            | 100  | 120      | 140        | 0,05 | 0,07     | 0,09       | 0,08 |      |      |     |
|  | 120 | 145 | 170                    | 0,08       | 0,10 | 0,12               | 0,09       | 0,11 | 0,14        | 0,15       | 0,18 | 0,21         | 0,17       | 0,21 | 0,24         | 0,20       | 0,24 | 0,27         | 0,24       | 0,28 | 0,32 |            | 85   | 100      | 115        | 0,05 | 0,07     | 0,09       | 0,08 | 0,10 | 0,12 | 2.1 |
|  | 100 | 120 | 140                    | 0,08       | 0,10 | 0,12               | 0,09       | 0,11 | 0,14        | 0,15       | 0,18 | 0,21         | 0,17       | 0,21 | 0,24         | 0,20       | 0,24 | 0,27         | 0,24       | 0,28 | 0,32 |            | 70   | 85       | 100        | 0,05 | 0,07     | 0,09       | 0,08 | 0,10 | 0,12 | 3.1 |
|  | 80  | 100 | 120                    | 0,06       | 0,08 | 0,10               | 0,08       | 0,10 | 0,14        | 0,12       | 0,16 | 0,18         | 0,15       | 0,18 | 0,21         | 0,16       | 0,20 | 0,24         | 0,18       | 0,24 | 0,30 |            | 60   | 70       | 80         | 0,05 | 0,06     | 0,07       | 0,08 | 0,09 | 0,10 | 4.1 |
|  | 60  | 70  | 80                     | 0,03       | 0,06 | 0,08               | 0,06       | 0,08 | 0,10        | 0,10       | 0,12 | 0,15         | 0,11       | 0,14 | 0,17         | 0,14       | 0,16 | 0,18         | 0,17       | 0,20 | 0,23 |            | 45   | 55       | 65         | 0,05 | 0,06     | 0,07       | 0,08 | 0,09 | 0,10 | 5.1 |
|  | 60  | 80  | 100                    | 0,04       | 0,06 | 0,08               | 0,07       | 0,09 | 0,10        | 0,09       | 0,11 | 0,13         | 0,11       | 0,14 | 0,17         | 0,15       | 0,19 | 0,22         | 0,18       | 0,22 | 0,26 |            | 60   | 80       | 100        | 0,05 | 0,06     | 0,07       | 0,08 | 0,09 | 0,10 | 1.1 |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            | 40   | 50       | 60         | 0,05 | 0,06     | 0,07       | 0,08 | 0,09 | 0,10 | 2.1 |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            | 35   | 40       | 45         | 0,05 | 0,06     | 0,07       | 0,08 | 0,09 | 0,10 | 3.1 |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            | 30   | 35       | 40         | 0,05 | 0,06     | 0,07       | 0,08 | 0,09 | 0,10 | 4.1 |
|  | 130 | 160 | 190                    | 0,12       | 0,16 | 0,20               | 0,17       | 0,22 | 0,26        | 0,24       | 0,30 | 0,34         | 0,27       | 0,33 | 0,39         | 0,30       | 0,36 | 0,46         | 0,35       | 0,41 | 0,52 |            | 120  | 150      | 180        | 0,05 | 0,10     | 0,15       | 0,08 | 0,12 | 0,16 | 1.1 |
|  | 110 | 140 | 160                    | 0,10       | 0,13 | 0,16               | 0,15       | 0,19 | 0,23        | 0,20       | 0,26 | 0,32         | 0,23       | 0,29 | 0,35         | 0,26       | 0,34 | 0,42         | 0,32       | 0,38 | 0,50 |            | 100  | 130      | 150        | 0,05 | 0,10     | 0,15       | 0,08 | 0,12 | 0,16 | 1.2 |
|  | 110 | 140 | 170                    | 0,10       | 0,14 | 0,17               | 0,15       | 0,20 | 0,24        | 0,21       | 0,27 | 0,33         | 0,24       | 0,30 | 0,36         | 0,27       | 0,35 | 0,43         | 0,33       | 0,39 | 0,51 |            | 100  | 130      | 160        | 0,05 | 0,08     | 0,11       | 0,08 | 0,11 | 0,14 | 2.1 |
|  | 120 | 140 | 160                    | 0,09       | 0,12 | 0,15               | 0,13       | 0,17 | 0,21        | 0,16       | 0,22 | 0,28         | 0,18       | 0,23 | 0,29         | 0,20       | 0,27 | 0,32         | 0,24       | 0,31 | 0,37 |            | 100  | 120      | 140        | 0,05 | 0,08     | 0,11       | 0,08 | 0,11 | 0,14 | 2.2 |
|  | 70  | 90  | 100                    | 0,10       | 0,12 | 0,14               | 0,13       | 0,15 | 0,19        | 0,17       | 0,21 | 0,26         | 0,21       | 0,26 | 0,31         | 0,27       | 0,32 | 0,37         | 0,32       | 0,37 | 0,41 |            | 70   | 80       | 90         | 0,05 | 0,07     | 0,09       | 0,08 | 0,10 | 0,12 | 3.1 |
|  | 70  | 90  | 100                    | 0,10       | 0,12 | 0,14               | 0,13       | 0,15 | 0,19        | 0,17       | 0,21 | 0,26         | 0,21       | 0,26 | 0,31         | 0,27       | 0,32 | 0,37         | 0,32       | 0,37 | 0,41 |            | 70   | 80       | 90         | 0,05 | 0,07     | 0,09       | 0,08 | 0,10 | 0,12 | 3.2 |
|  | 120 | 140 | 160                    | 0,10       | 0,13 | 0,16               | 0,14       | 0,17 | 0,21        | 0,18       | 0,24 | 0,30         | 0,22       | 0,30 | 0,34         | 0,24       | 0,32 | 0,40         | 0,28       | 0,38 | 0,46 |            | 110  | 130      | 150        | 0,05 | 0,08     | 0,11       | 0,08 | 0,11 | 0,14 | 4.1 |
|  | 100 | 120 | 140                    | 0,09       | 0,12 | 0,15               | 0,12       | 0,16 | 0,20        | 0,16       | 0,21 | 0,27         | 0,20       | 0,27 | 0,31         | 0,22       | 0,29 | 0,36         | 0,27       | 0,34 | 0,42 |            | 90   | 110      | 130        | 0,05 | 0,08     | 0,11       | 0,08 | 0,11 | 0,14 | 4.2 |
|  | 220 | 260 | 280                    | 0,12       | 0,14 | 0,17               | 0,18       | 0,22 | 0,25        | 0,24       | 0,28 | 0,32         | 0,30       | 0,35 | 0,40         | 0,38       | 0,43 | 0,48         | 0,45       | 0,52 | 0,60 |            | 210  | 240      | 270        | 0,08 | 0,12     | 0,16       | 0,11 | 0,15 | 0,18 | 1.1 |
|  | 220 | 260 | 280                    | 0,12       | 0,14 | 0,17               | 0,18       | 0,22 | 0,25        | 0,24       | 0,28 | 0,32         | 0,30       | 0,35 | 0,40         | 0,38       | 0,43 | 0,48         | 0,45       | 0,52 | 0,60 |            | 210  | 240      | 270        | 0,08 | 0,12     | 0,16       | 0,11 | 0,15 | 0,18 | 1.2 |
|  | 200 | 230 | 260                    | 0,12       | 0,14 | 0,17               | 0,18       | 0,22 | 0,25        | 0,24       | 0,28 | 0,32         | 0,30       | 0,35 | 0,40         | 0,38       | 0,43 | 0,48         | 0,45       | 0,52 | 0,60 |            | 180  | 200      | 220        | 0,06 | 0,10     | 0,14       | 0,09 | 0,13 | 0,16 | 1.3 |
|  | 200 | 230 | 260                    | 0,12       | 0,14 | 0,17               | 0,18       | 0,22 | 0,25        | 0,24       | 0,28 | 0,32         | 0,30       | 0,35 | 0,40         | 0,38       | 0,43 | 0,48         | 0,45       | 0,52 | 0,60 |            | 180  | 200      | 220        | 0,08 | 0,12     | 0,16       | 0,11 | 0,15 | 0,18 | 1.4 |
|  | 165 | 185 | 200                    | 0,12       | 0,14 | 0,16               | 0,16       | 0,18 | 0,22        | 0,22       | 0,26 | 0,30         | 0,29       | 0,34 | 0,38         | 0,35       | 0,39 | 0,44         | 0,40       | 0,45 | 0,50 |            | 150  | 170      | 180        | 0,08 | 0,12     | 0,16       | 0,11 | 0,15 | 0,18 | 1.5 |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      | 1.6 |
|  | 115 | 135 | 170                    | 0,07       | 0,09 | 0,14               | 0,09       | 0,12 | 0,16        | 0,13       | 0,16 | 0,18         | 0,16       | 0,19 | 0,23         | 0,18       | 0,22 | 0,27         | 0,21       | 0,26 | 0,30 |            | 110  | 130      | 160        | 0,06 | 0,08     | 0,10       | 0,09 | 0,11 | 0,13 | 2.1 |
|  | 160 | 175 | 190                    | 0,06       | 0,09 | 0,11               | 0,12       | 0,14 | 0,16        | 0,16       | 0,20 | 0,24         | 0,20       | 0,24 | 0,28         | 0,24       | 0,28 | 0,32         | 0,28       | 0,33 | 0,37 |            | 150  | 160      | 170        | 0,06 | 0,08     | 0,10       | 0,09 | 0,11 | 0,13 | 2.2 |
|  | 190 | 220 | 250                    | 0,12       | 0,14 | 0,16               | 0,14       | 0,16 | 0,20        | 0,20       | 0,25 | 0,30         | 0,24       | 0,30 | 0,38         | 0,28       | 0,36 | 0,41         | 0,32       | 0,38 | 0,45 |            | 180  | 210      | 240        | 0,08 | 0,10     | 0,12       | 0,11 | 0,13 | 0,15 | 2.3 |
|  | 70  | 90  | 110                    | 0,05       | 0,07 | 0,08               | 0,07       | 0,09 | 0,11        | 0,12       | 0,14 | 0,16         | 0,14       | 0,16 | 0,20         | 0,16       | 0,18 | 0,22         | 0,18       | 0,20 | 0,25 |            | 60   | 80       | 90         | 0,05 | 0,07     | 0,09       | 0,08 | 0,10 | 0,12 | 2.4 |
|  | 120 | 160 | 180                    | 0,06       | 0,08 | 0,10               | 0,08       | 0,12 | 0,14        | 0,14       | 0,18 | 0,20         | 0,16       | 0,20 | 0,24         | 0,20       | 0,23 | 0,26         | 0,22       | 0,25 | 0,30 |            | 90   | 110      | 140        | 0,05 | 0,07     | 0,09       | 0,08 | 0,10 | 0,12 | 2.5 |
|  | 100 | 115 | 130                    | 0,07       | 0,09 | 0,11               | 0,09       | 0,11 | 0,13        | 0,15       | 0,17 | 0,20         | 0,18       | 0,21 | 0,23         | 0,21       | 0,24 | 0,27         | 0,24       | 0,28 | 0,32 |            | 90   | 110      | 110        | 0,08 | 0,10     | 0,12       | 0,11 | 0,13 | 0,15 | 2.6 |
|  | 60  | 65  | 70                     | 0,03       | 0,04 | 0,05               | 0,04       | 0,05 | 0,07        | 0,08       | 0,09 | 0,10         | 0,09       | 0,10 | 0,12         | 0,10       | 0,12 | 0,14         | 0,12       | 0,14 | 0,16 |            | 50   | 55       | 60         | 0,05 | 0,07     | 0,09       | 0,08 | 0,10 | 0,12 | 2.7 |
|  | 65  | 70  | 75                     | 0,03       | 0,04 | 0,05               | 0,04       | 0,05 | 0,07        | 0,08       | 0,09 | 0,10         | 0,09       | 0,10 | 0,12         | 0,10       | 0,12 | 0,14         | 0,12       | 0,14 | 0,16 |            | 50   | 55       | 60         | 0,05 | 0,07     | 0,09       | 0,08 | 0,10 | 0,12 | 2.8 |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      | 3.1 |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      | 3.2 |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      | 4.1 |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      | 4.2 |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      | 4.3 |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      | 4.4 |
|  |     |     |                        | 0,10       | 0,12 | 0,14               | 0,12       | 0,14 | 0,16        | 0,14       | 0,16 | 0,18         | 0,16       | 0,19 | 0,21         | 0,18       | 0,21 | 0,24         | 0,20       | 0,24 | 0,28 |            | 70   | 90       | 120        | 0,06 | 0,08     | 0,10       | 0,09 | 0,11 | 0,13 | 5.1 |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      | 5.2 |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      | 5.3 |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |
|  |     |     |                        |            |      |                    |            |      |             |            |      |              |            |      |              |            |      |              |            |      |      |            |      |          |            |      |          |            |      |      |      |     |



### EF-Drill-Micro-STEEL

# 6 x D



VHM  
Carbide

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IT9-IT10

DIN 6535

HA

STEEL  
Steel  
materials



# 6 x D

Bohrtiefe  
Drill depth

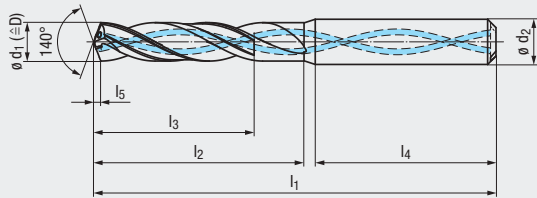
Einsatzgebiete – Material  
Applications – material

» 14

|   |         |   |         |   |         |
|---|---------|---|---------|---|---------|
| P | 1.1-5.1 | M | 1.1-4.1 | K | 1.1-4.2 |
| N | 1.1-1.6 | N | 2.2-2.3 | S | 1.2-1.3 |

| Ø d <sub>1</sub><br>k5 | Gewindebohrer<br>Taps    | Gewindeformer<br>Cold-forming taps |                |                |                |                |                |                  | EF-Drill-Micro<br>STEEL-6xD | HA |
|------------------------|--------------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------|-----------------------------|----|
|                        |                          |                                    | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | Ø d <sub>2</sub> |                             |    |
| 0,75                   | M1                       |                                    | 51,5           | 5,7            | 4,5            | 28             | 0,105          | 3                | TE213324.0075               |    |
| 0,80                   | M1x0,2                   |                                    | 51,5           | 6,1            | 4,8            | 28             | 0,112          | 3                | TE213324.0080               |    |
| 0,85                   | M1,1                     |                                    | 51,5           | 6,5            | 5,1            | 28             | 0,119          | 3                | TE213324.0085               |    |
| 0,90                   | M1,1x0,2                 | M1                                 | 51,5           | 6,9            | 5,4            | 28             | 0,126          | 3                | TE213324.0090               |    |
| 0,95                   | M1,2                     |                                    | 51,5           | 7,3            | 5,7            | 28             | 0,132          | 3                | TE213324.0095               |    |
| 1,00                   | M1,2x0,2                 | M1,1                               | 55             | 7,7            | 6              | 28             | 0,139          | 4                | TE213324.0100               |    |
| 1,10                   | M1,4                     | M1,2                               | 55             | 8,5            | 6,6            | 28             | 0,153          | 4                | TE213324.0110               |    |
| 1,20                   | M1,4x0,2                 |                                    | 55             | 9,3            | 7,2            | 28             | 0,167          | 4                | TE213324.0120               |    |
| 1,25                   | M1,6 / #0-80             |                                    | 55             | 9,7            | 7,5            | 28             | 0,174          | 4                | TE213324.0125               |    |
| 1,28                   |                          | M1,4                               | 55             | 9,7            | 7,7            | 28             | 0,178          | 4                | TE213324.0128               |    |
| 1,30                   | MJ1,6x0,35               |                                    | 57             | 10,1           | 7,8            | 28             | 0,181          | 4                | TE213324.0130               |    |
| 1,35                   | M1,7                     |                                    | 57             | 10,5           | 8,1            | 28             | 0,188          | 4                | TE213324.0135               |    |
| 1,40                   | M1,6x0,2                 | #0-80                              | 57             | 10,9           | 8,4            | 28             | 0,195          | 4                | TE213324.0140               |    |
| 1,45                   | M1,8                     |                                    | 57             | 11,3           | 8,7            | 28             | 0,202          | 4                | TE213324.0145               |    |
| 1,47                   |                          | M1,6                               | 57             | 11,3           | 8,8            | 28             | 0,202          | 4                | TE213324.0147               |    |
| 1,50                   |                          |                                    | 57             | 11,7           | 9              | 28             | 0,209          | 4                | TE213324.0150               |    |
| 1,57                   |                          | M1,7                               | 59             | 11,7           | 9,4            | 28             | 0,219          | 4                | TE213324.0157               |    |
| 1,60                   | M2 / M1,8x0,2            |                                    | 59             | 12,5           | 9,6            | 28             | 0,223          | 4                | TE213324.0160               |    |
| 1,67                   |                          | M1,8                               | 59             | 12,5           | 10             | 28             | 0,233          | 4                | TE213324.0167               |    |
| 1,70                   |                          | #1-64 / #1-72                      | 59             | 13,3           | 10,2           | 28             | 0,237          | 4                | TE213324.0170               |    |
| 1,75                   | M2,2 / M2x0,25           |                                    | 59             | 13,7           | 10,5           | 28             | 0,244          | 4                | TE213324.0175               |    |
| 1,80                   |                          |                                    | 61             | 14,1           | 10,8           | 28             | 0,251          | 4                | TE213324.0180               |    |
| 1,85                   | #2-56 / #2-64            | M2                                 | 61             | 14,5           | 11,1           | 28             | 0,258          | 4                | TE213324.0185               |    |
| 1,90                   | M2,3                     |                                    | 61             | 14,9           | 11,4           | 28             | 0,265          | 4                | TE213324.0190               |    |
| 1,95                   | M2,2x0,25 / M2,3x0,35    |                                    | 61             | 15,3           | 11,7           | 28             | 0,272          | 4                | TE213324.0195               |    |
| 2,00                   |                          | #2-56                              | 63             | 15,7           | 12             | 28             | 0,279          | 4                | TE213324.0200               |    |
| 2,03                   |                          | M2,2                               | 63             | 15,7           | 12,2           | 28             | 0,283          | 4                | TE213324.0203               |    |
| 2,05                   | M2,5 / M2,3x0,25         |                                    | 63             | 16,1           | 12,3           | 28             | 0,286          | 4                | TE213324.0205               |    |
| 2,10                   | MJ2,5x0,45 / #3-48       |                                    | 63             | 16,5           | 12,6           | 28             | 0,293          | 4                | TE213324.0210               |    |
| 2,15                   | M2,6 / M2,5x0,35 / #3-56 | M2,3                               | 63             | 16,9           | 12,9           | 28             | 0,300          | 4                | TE213324.0215               |    |
| 2,20                   |                          |                                    | 63             | 17,3           | 13,2           | 28             | 0,307          | 4                | TE213324.0220               |    |
| 2,30                   |                          | #3-48                              | 65             | 18,1           | 13,8           | 28             | 0,321          | 4                | TE213324.0230               |    |
| 2,33                   |                          | M2,5                               | 65             | 18,1           | 14             | 28             | 0,325          | 4                | TE213324.0233               |    |
| 2,40                   | #4-48                    |                                    | 65             | 18,9           | 14,4           | 28             | 0,335          | 4                | TE213324.0240               |    |
| 2,43                   |                          | M2,6                               | 65             | 18,9           | 14,6           | 28             | 0,339          | 4                | TE213324.0243               |    |
| 2,50                   | M3                       |                                    | 65             | 19,7           | 15             | 28             | 0,349          | 4                | TE213324.0250               |    |
| 2,60                   | MJ3x0,5                  |                                    | 66,5           | 20,5           | 15,6           | 28             | 0,363          | 4                | TE213324.0260               |    |
| 2,65                   | M3x0,35 / #5-40          |                                    | 66,5           | 20,9           | 15,9           | 28             | 0,370          | 4                | TE213324.0265               |    |
| 2,70                   | #5-44                    |                                    | 66,5           | 21,3           | 16,2           | 28             | 0,377          | 4                | TE213324.0270               |    |
| 2,80                   |                          | M3                                 | 68,5           | 22,1           | 16,8           | 28             | 0,390          | 4                | TE213324.0280               |    |
| 2,90                   | M3,5                     | #5-40                              | 68,5           | 22,9           | 17,4           | 28             | 0,404          | 4                | TE213324.0290               |    |
| 3,00                   | M3,5x0,5 / MJ3,5x0,6     |                                    | 73             | 23,7           | 18             | 36             | 0,418          | 4                | TE213324.0300               |    |

## BasicDrill-BD101

3 x D Kurze Ausführung  
Short designVHM  
Carbide

TIALN

DIN  
6537 K

R30

Z2

4FF

140°

IT9-IT10

DIN 6535

HA  
HB  
HEBASIC  
Universal  
applicationBohrtiefe  
Drill depth

3 x D

Einsatzgebiete – Material  
Applications – material

» 14

P 1.1-5.1  
N 1.1-2.3M 1.1-3.1  
S 1.2-1.3, 2.2-2.3K 1.1-4.2  
H 1.1-1.3

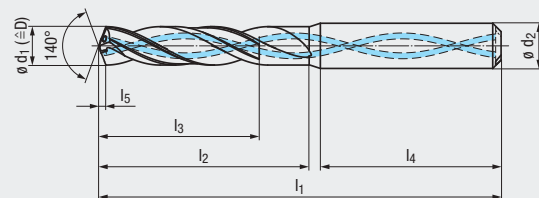
| Ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps   | Gewindeformer<br>Cold-forming taps | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | Ø d <sub>2</sub><br>h6 | BasicDrill<br>BD101-3xD<br>HA | BasicDrill<br>BD101-3xD<br>HE | BasicDrill<br>BD101-3xD<br>HB |
|------------------------|-------------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------------------|-------------------------------|-------------------------------|
| 3,00                   | M3,5x0,5 / MJ3,5x0,6    |                                    | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201344.0300                 | TA501344.0300                 | TA601344.0300                 |
| 3,10                   |                         |                                    | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201344.0310                 | TA501344.0310                 | TA601344.0310                 |
| 3,15                   | M3,5x0,35               | #6-32                              | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201344.0315                 | TA501344.0315                 | TA601344.0315                 |
| 3,18                   |                         |                                    | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201344.0318                 | TA501344.0318                 | TA601344.0318                 |
| 3,20                   | MJ3,5x0,35              |                                    | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201344.0320                 | TA501344.0320                 | TA601344.0320                 |
| 3,22                   |                         | #6-40                              | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201344.0322                 | TA501344.0322                 | TA601344.0322                 |
| 3,25                   |                         | M3,5                               | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201344.0325                 | TA501344.0325                 | TA601344.0325                 |
| 3,30                   | M4                      | M3,5x0,5                           | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201344.0330                 | TA501344.0330                 | TA601344.0330                 |
| 3,35                   |                         |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201344.0335                 | TA501344.0335                 | TA601344.0335                 |
| 3,38                   |                         | M3,5x0,35                          | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201344.0338                 | TA501344.0338                 | TA601344.0338                 |
| 3,40                   | MJ4x0,7                 |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201344.0340                 | TA501344.0340                 | TA601344.0340                 |
| 3,50                   | M4x0,5 / #8-32 / #8-36  |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201344.0350                 | TA501344.0350                 | TA601344.0350                 |
| 3,57                   |                         |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201344.0357                 | TA501344.0357                 | TA601344.0357                 |
| 3,60                   | MJ4x0,5                 |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201344.0360                 | TA501344.0360                 | TA601344.0360                 |
| 3,65                   | M4x0,35                 |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201344.0365                 | TA501344.0365                 | TA601344.0365                 |
| 3,70                   | M4,5                    | M4                                 | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201344.0370                 | TA501344.0370                 | TA601344.0370                 |
| 3,80                   |                         | M4x0,5 / #8-32                     | 66             | 24             | 17             | 36             | 0,6            | 6                      | TA201344.0380                 | TA501344.0380                 | TA601344.0380                 |
| 3,85                   |                         | #8-36                              | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201344.0385                 | TA501344.0385                 | TA601344.0385                 |
| 3,88                   |                         | M4x0,35                            | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201344.0388                 | TA501344.0388                 | TA601344.0388                 |
| 3,90                   | MJ4,5x0,75 / #10-24     |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201344.0390                 | TA501344.0390                 | TA601344.0390                 |
| 3,97                   |                         |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201344.0397                 | TA501344.0397                 | TA601344.0397                 |
| 4,00                   |                         |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201344.0400                 | TA501344.0400                 | TA601344.0400                 |
| 4,04                   |                         |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201344.0404                 | TA501344.0404                 | TA601344.0404                 |
| 4,10                   | MJ4,5x0,5 / #10-32      |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201344.0410                 | TA501344.0410                 | TA601344.0410                 |
| 4,15                   | M5x0,9                  |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201344.0415                 | TA501344.0415                 | TA601344.0415                 |
| 4,20                   | M5 / M5x0,75            | M4,5                               | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201344.0420                 | TA501344.0420                 | TA601344.0420                 |
| 4,30                   | MJ5x0,8                 | M4,5x0,5 / #10-24 (GAL)            | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201344.0430                 | TA501344.0430                 | TA601344.0430                 |
| 4,35                   |                         | #10-24                             | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201344.0435                 | TA501344.0435                 | TA601344.0435                 |
| 4,37                   |                         |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201344.0437                 | TA501344.0437                 | TA601344.0437                 |
| 4,40                   |                         |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201344.0440                 | TA501344.0440                 | TA601344.0440                 |
| 4,45                   |                         | #10-32                             | 66             | 24             | 17             | 36             | 0,8            | 6                      | TA201344.0445                 | TA501344.0445                 | TA601344.0445                 |
| 4,50                   | M5x0,5 / #12-24         |                                    | 66             | 24             | 17             | 36             | 0,8            | 6                      | TA201344.0450                 | TA501344.0450                 | TA601344.0450                 |
| 4,60                   | M5,5 / MJ5x0,5 / #12-28 |                                    | 66             | 24             | 17             | 36             | 0,8            | 6                      | TA201344.0460                 | TA501344.0460                 | TA601344.0460                 |
| 4,65                   |                         | M5                                 | 66             | 24             | 17             | 36             | 0,8            | 6                      | TA201344.0465                 | TA501344.0465                 | TA601344.0465                 |
| 4,70                   |                         | M5x0,75                            | 66             | 24             | 17             | 36             | 0,8            | 6                      | TA201344.0470                 | TA501344.0470                 | TA601344.0470                 |
| 4,76                   |                         |                                    | 66             | 28             | 20             | 36             | 0,8            | 6                      | TA201344.0476                 | TA501344.0476                 | TA601344.0476                 |
| 4,80                   |                         | M5x0,5                             | 66             | 28             | 20             | 36             | 0,8            | 6                      | TA201344.0480                 | TA501344.0480                 | TA601344.0480                 |
| 4,90                   |                         |                                    | 66             | 28             | 20             | 36             | 0,8            | 6                      | TA201344.0490                 | TA501344.0490                 | TA601344.0490                 |
| 5,00                   | M6                      | #12-24                             | 66             | 28             | 20             | 36             | 0,8            | 6                      | TA201344.0500                 | TA501344.0500                 | TA601344.0500                 |
| 5,10                   | MJ6x1 / 1/4-20          | M5,5 / #12-28                      | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201344.0510                 | TA501344.0510                 | TA601344.0510                 |
| 5,11                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201344.0511                 | TA501344.0511                 | TA601344.0511                 |
| 5,16                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201344.0516                 | TA501344.0516                 | TA601344.0516                 |
| 5,20                   | M6x0,75                 |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201344.0520                 | TA501344.0520                 | TA601344.0520                 |
| 5,30                   |                         | M5,5x0,5                           | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201344.0530                 | TA501344.0530                 | TA601344.0530                 |
| 5,40                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201344.0540                 | TA501344.0540                 | TA601344.0540                 |
| 5,41                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201344.0541                 | TA501344.0541                 | TA601344.0541                 |
| 5,50                   | M6x0,5 / 1/4-28         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201344.0550                 | TA501344.0550                 | TA601344.0550                 |
| 5,55                   |                         | M6 (GAL)                           | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201344.0555                 | TA501344.0555                 | TA601344.0555                 |
| 5,56                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201344.0556                 | TA501344.0556                 | TA601344.0556                 |
| 5,60                   | MJ6x0,5                 | M6                                 | 66             | 28             | 20             | 36             | 1,0            | 6                      | TA201344.0560                 | TA501344.0560                 | TA601344.0560                 |
| 5,70                   |                         | M6x0,75 / 1/4-20 (GAL)             | 66             | 28             | 20             | 36             | 1,0            | 6                      | TA201344.0570                 | TA501344.0570                 | TA601344.0570                 |
| 5,75                   |                         | 1/4-20                             | 66             | 28             | 20             | 36             | 1,0            | 6                      | TA201344.0575                 | TA501344.0575                 | TA601344.0575                 |

Ø 5,80 mm - Ø 18,00 mm →

### BasicDrill-BD101

## 3 x D

Kurze Ausführung  
Short design



VHM  
Carbide

TIALN

DIN  
6537 K

R30



DIN 6535



BASIC  
Universal  
application



## 3 x D

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material



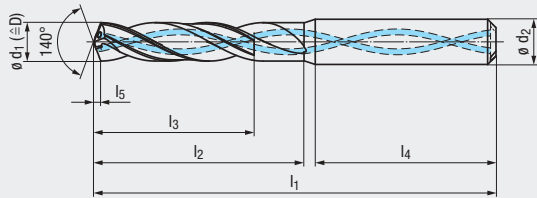
14

|   |         |   |                  |   |         |
|---|---------|---|------------------|---|---------|
| P | 1.1-5.1 | M | 1.1-3.1          | K | 1.1-4.2 |
| N | 1.1-2.3 | S | 1.2-1.3, 2.2-2.3 | H | 1.1-1.3 |

|                       | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps |       |       |       |       |       |                       | BasicDrill<br>BD101-3xD | BasicDrill<br>BD101-3xD | BasicDrill<br>BD101-3xD |
|-----------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-----------------------|-------------------------|-------------------------|-------------------------|
| $\emptyset d_1$<br>m7 |                       |                                    | $l_1$ | $l_2$ | $l_3$ | $l_4$ | $l_5$ | $\emptyset d_2$<br>h6 | HA                      | HE                      | HB                      |
| 5,80                  |                       | M6x0,5                             | 66    | 28    | 20    | 36    | 1,0   | 6                     | TA201344.0580           | TA501344.0580           | TA601344.0580           |
| 5,90                  |                       |                                    | 66    | 28    | 20    | 36    | 1,0   | 6                     | TA201344.0590           | TA501344.0590           | TA601344.0590           |
| 5,95                  |                       | 1/4-28                             | 66    | 28    | 20    | 36    | 1,0   | 6                     | TA201344.0595           | TA501344.0595           | TA601344.0595           |
| 6,00                  | M7                    |                                    | 66    | 28    | 20    | 36    | 1,0   | 6                     | TA201344.0600           | TA501344.0600           | TA601344.0600           |
| 6,10                  | MJ7x1                 |                                    | 79    | 34    | 24    | 36    | 1,0   | 8                     | TA201344.0610           | TA501344.0610           | TA601344.0610           |
| 6,20                  | M7x0,75               |                                    | 79    | 34    | 24    | 36    | 1,1   | 8                     | TA201344.0620           | TA501344.0620           | TA601344.0620           |
| 6,30                  |                       |                                    | 79    | 34    | 24    | 36    | 1,1   | 8                     | TA201344.0630           | TA501344.0630           | TA601344.0630           |
| 6,35                  | MJ7x0,75              |                                    | 79    | 34    | 24    | 36    | 1,1   | 8                     | TA201344.0635           | TA501344.0635           | TA601344.0635           |
| 6,40                  |                       |                                    | 79    | 34    | 24    | 36    | 1,1   | 8                     | TA201344.0640           | TA501344.0640           | TA601344.0640           |
| 6,50                  | M7x0,5                |                                    | 79    | 34    | 24    | 36    | 1,1   | 8                     | TA201344.0650           | TA501344.0650           | TA601344.0650           |
| 6,53                  |                       |                                    | 79    | 34    | 24    | 36    | 1,1   | 8                     | TA201344.0653           | TA501344.0653           | TA601344.0653           |
| 6,60                  | 5/16-18               | M7                                 | 79    | 34    | 24    | 36    | 1,1   | 8                     | TA201344.0660           | TA501344.0660           | TA601344.0660           |
| 6,70                  |                       | M7x0,75                            | 79    | 34    | 24    | 36    | 1,1   | 8                     | TA201344.0670           | TA501344.0670           | TA601344.0670           |
| 6,75                  |                       |                                    | 79    | 34    | 24    | 36    | 1,1   | 8                     | TA201344.0675           | TA501344.0675           | TA601344.0675           |
| 6,80                  | M8 / G1/16            | M7x0,5                             | 79    | 34    | 24    | 36    | 1,2   | 8                     | TA201344.0680           | TA501344.0680           | TA601344.0680           |
| 6,90                  | MJ8x1,25 / 5/16-24    |                                    | 79    | 34    | 24    | 36    | 1,2   | 8                     | TA201344.0690           | TA501344.0690           | TA601344.0690           |
| 7,00                  | M8x1                  |                                    | 79    | 34    | 24    | 36    | 1,2   | 8                     | TA201344.0700           | TA501344.0700           | TA601344.0700           |
| 7,10                  | MJ8x1                 |                                    | 79    | 41    | 29    | 36    | 1,2   | 8                     | TA201344.0710           | TA501344.0710           | TA601344.0710           |
| 7,15                  |                       |                                    | 79    | 41    | 29    | 36    | 1,2   | 8                     | TA201344.0715           | TA501344.0715           | TA601344.0715           |
| 7,20                  | M8x0,75               |                                    | 79    | 41    | 29    | 36    | 1,2   | 8                     | TA201344.0720           | TA501344.0720           | TA601344.0720           |
| 7,25                  |                       | 5/16-18 (GAL) / G1/16              | 79    | 41    | 29    | 36    | 1,2   | 8                     | TA201344.0725           | TA501344.0725           | TA601344.0725           |
| 7,30                  |                       | 5/16-18                            | 79    | 41    | 29    | 36    | 1,2   | 8                     | TA201344.0730           | TA501344.0730           | TA601344.0730           |
| 7,40                  |                       | M8 (GAL) / 5/16-24 (GAL)           | 79    | 41    | 29    | 36    | 1,3   | 8                     | TA201344.0740           | TA501344.0740           | TA601344.0740           |
| 7,45                  |                       | M8 / 5/16-24                       | 79    | 41    | 29    | 36    | 1,3   | 8                     | TA201344.0745           | TA501344.0745           | TA601344.0745           |
| 7,50                  | M8x0,5                |                                    | 79    | 41    | 29    | 36    | 1,3   | 8                     | TA201344.0750           | TA501344.0750           | TA601344.0750           |
| 7,54                  |                       |                                    | 79    | 41    | 29    | 36    | 1,3   | 8                     | TA201344.0754           | TA501344.0754           | TA601344.0754           |
| 7,60                  |                       | M8x1                               | 79    | 41    | 29    | 36    | 1,3   | 8                     | TA201344.0760           | TA501344.0760           | TA601344.0760           |
| 7,70                  |                       | M8x0,75                            | 79    | 41    | 29    | 36    | 1,3   | 8                     | TA201344.0770           | TA501344.0770           | TA601344.0770           |
| 7,80                  | M9                    | M8x0,5                             | 79    | 41    | 29    | 36    | 1,3   | 8                     | TA201344.0780           | TA501344.0780           | TA601344.0780           |
| 7,90                  | MJ9x1,25              |                                    | 79    | 41    | 29    | 36    | 1,3   | 8                     | TA201344.0790           | TA501344.0790           | TA601344.0790           |
| 7,94                  |                       |                                    | 79    | 41    | 29    | 36    | 1,3   | 8                     | TA201344.0794           | TA501344.0794           | TA601344.0794           |
| 8,00                  | M9x1 / 3/8-16         |                                    | 79    | 41    | 29    | 36    | 1,4   | 8                     | TA201344.0800           | TA501344.0800           | TA601344.0800           |
| 8,10                  | MJ9x1                 |                                    | 89    | 47    | 35    | 40    | 1,4   | 10                    | TA201344.0810           | TA501344.0810           | TA601344.0810           |
| 8,20                  | M9x0,75               |                                    | 89    | 47    | 35    | 40    | 1,4   | 10                    | TA201344.0820           | TA501344.0820           | TA601344.0820           |
| 8,30                  |                       |                                    | 89    | 47    | 35    | 40    | 1,4   | 10                    | TA201344.0830           | TA501344.0830           | TA601344.0830           |
| 8,33                  |                       |                                    | 89    | 47    | 35    | 40    | 1,4   | 10                    | TA201344.0833           | TA501344.0833           | TA601344.0833           |
| 8,40                  |                       | M9 (GAL)                           | 89    | 47    | 35    | 40    | 1,4   | 10                    | TA201344.0840           | TA501344.0840           | TA601344.0840           |
| 8,45                  |                       | M9                                 | 89    | 47    | 35    | 40    | 1,4   | 10                    | TA201344.0845           | TA501344.0845           | TA601344.0845           |
| 8,50                  | M10 / M9x0,5 / 3/8-24 |                                    | 89    | 47    | 35    | 40    | 1,4   | 10                    | TA201344.0850           | TA501344.0850           | TA601344.0850           |
| 8,60                  | MJ10x1,5              | M9x1                               | 89    | 47    | 35    | 40    | 1,5   | 10                    | TA201344.0860           | TA501344.0860           | TA601344.0860           |
| 8,70                  |                       | M9x0,75                            | 89    | 47    | 35    | 40    | 1,5   | 10                    | TA201344.0870           | TA501344.0870           | TA601344.0870           |
| 8,73                  |                       |                                    | 89    | 47    | 35    | 40    | 1,5   | 10                    | TA201344.0873           | TA501344.0873           | TA601344.0873           |
| 8,80                  | M10x1,25 / G1/8       | M9x0,5 / 3/8-16                    | 89    | 47    | 35    | 40    | 1,5   | 10                    | TA201344.0880           | TA501344.0880           | TA601344.0880           |
| 8,90                  | MJ10x1,25             |                                    | 89    | 47    | 35    | 40    | 1,5   | 10                    | TA201344.0890           | TA501344.0890           | TA601344.0890           |
| 9,00                  | M10x1                 | 3/8-24 (GAL)                       | 89    | 47    | 35    | 40    | 1,5   | 10                    | TA201344.0900           | TA501344.0900           | TA601344.0900           |
| 9,05                  |                       | 3/8-24                             | 89    | 47    | 35    | 40    | 1,5   | 10                    | TA201344.0905           | TA501344.0905           | TA601344.0905           |
| 9,10                  | MJ10x1                |                                    | 89    | 47    | 35    | 40    | 1,5   | 10                    | TA201344.0910           | TA501344.0910           | TA601344.0910           |
| 9,13                  |                       |                                    | 89    | 47    | 35    | 40    | 1,5   | 10                    | TA201344.0913           | TA501344.0913           | TA601344.0913           |
| 9,20                  | M10x0,75              |                                    | 89    | 47    | 35    | 40    | 1,6   | 10                    | TA201344.0920           | TA501344.0920           | TA601344.0920           |
| 9,30                  |                       | M10 (GAL)                          | 89    | 47    | 35    | 40    | 1,6   | 10                    | TA201344.0930           | TA501344.0930           | TA601344.0930           |
| 9,35                  | MJ10x0,75             | M10                                | 89    | 47    | 35    | 40    | 1,6   | 10                    | TA201344.0935           | TA501344.0935           | TA601344.0935           |
| 9,40                  | 7/16-14               | M10x1,25 (GAL)                     | 89    | 47    | 35    | 40    | 1,6   | 10                    | TA201344.0940           | TA501344.0940           | TA601344.0940           |



## BasicDrill-BD101

3 x D Kurze Ausführung  
Short designVHM  
Carbide

TIALN

DIN  
6537 K

R30

Z2

4FF

140°

IT9-IT10

DIN 6535

HA  
HB  
HEBASIC  
Universal  
applicationBohrtiefe  
Drill depth

3 x D

Einsatzgebiete – Material  
Applications – material

» 14

|           |                    |           |
|-----------|--------------------|-----------|
| P 1.1-5.1 | M 1.1-3.1          | K 1.1-4.2 |
| N 1.1-2.3 | S 1.2-1.3, 2.2-2.3 | H 1.1-1.3 |

| Ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | Ø d <sub>2</sub><br>h6 | BasicDrill<br>BD101-3xD<br>HA | BasicDrill<br>BD101-3xD<br>HE | BasicDrill<br>BD101-3xD<br>HB |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------------------|-------------------------------|-------------------------------|
| 9,45                   |                       | M10x1,25                           | 89             | 47             | 35             | 40             | 1,6            | 10                     | TA201344.0945                 | TA501344.0945                 | TA601344.0945                 |
| 9,50                   | M11 / M10x0,5         |                                    | 89             | 47             | 35             | 40             | 1,6            | 10                     | TA201344.0950                 | TA501344.0950                 | TA601344.0950                 |
| 9,53                   |                       |                                    | 89             | 47             | 35             | 40             | 1,6            | 10                     | TA201344.0953                 | TA501344.0953                 | TA601344.0953                 |
| 9,60                   | MJ10x0,5 / MJ11x1,5   | M10x1                              | 89             | 47             | 35             | 40             | 1,6            | 10                     | TA201344.0960                 | TA501344.0960                 | TA601344.0960                 |
| 9,70                   |                       | M10x0,75                           | 89             | 47             | 35             | 40             | 1,6            | 10                     | TA201344.0970                 | TA501344.0970                 | TA601344.0970                 |
| 9,80                   |                       | M10x0,5                            | 89             | 47             | 35             | 40             | 1,7            | 10                     | TA201344.0980                 | TA501344.0980                 | TA601344.0980                 |
| 9,90                   | MJ11x1,25 / 7/16-20   |                                    | 89             | 47             | 35             | 40             | 1,7            | 10                     | TA201344.0990                 | TA501344.0990                 | TA601344.0990                 |
| 9,92                   |                       |                                    | 89             | 47             | 35             | 40             | 1,7            | 10                     | TA201344.0992                 | TA501344.0992                 | TA601344.0992                 |
| 10,00                  | M11x1                 |                                    | 89             | 47             | 35             | 40             | 1,7            | 10                     | TA201344.1000                 | TA501344.1000                 | TA601344.1000                 |
| 10,10                  | MJ11x1                |                                    | 102            | 55             | 40             | 45             | 1,7            | 12                     | TA201344.1010                 | TA501344.1010                 | TA601344.1010                 |
| 10,20                  | M12 / M11x0,75        | 7/16-14 (GAL)                      | 102            | 55             | 40             | 45             | 1,7            | 12                     | TA201344.1020                 | TA501344.1020                 | TA601344.1020                 |
| 10,25                  |                       | 7/16-14                            | 102            | 55             | 40             | 45             | 1,7            | 12                     | TA201344.1025                 | TA501344.1025                 | TA601344.1025                 |
| 10,30                  |                       | M11 (GAL)                          | 102            | 55             | 40             | 45             | 1,7            | 12                     | TA201344.1030                 | TA501344.1030                 | TA601344.1030                 |
| 10,32                  |                       |                                    | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201344.1032                 | TA501344.1032                 | TA601344.1032                 |
| 10,35                  | MJ11x0,75             | M11                                | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201344.1035                 | TA501344.1035                 | TA601344.1035                 |
| 10,40                  |                       |                                    | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201344.1040                 | TA501344.1040                 | TA601344.1040                 |
| 10,50                  | M12x1,5               | 7/16-20 (GAL)                      | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201344.1050                 | TA501344.1050                 | TA601344.1050                 |
| 10,55                  |                       | M11x1 (GAL) / 7/16-20              | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201344.1055                 | TA501344.1055                 | TA601344.1055                 |
| 10,72                  |                       |                                    | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201344.1072                 | TA501344.1072                 | TA601344.1072                 |
| 10,80                  | M12x1,25 / 1/2-13     |                                    | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201344.1080                 | TA501344.1080                 | TA601344.1080                 |
| 10,90                  | MJ12x1,25             |                                    | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201344.1090                 | TA501344.1090                 | TA601344.1090                 |
| 11,00                  | M12x1                 |                                    | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201344.1100                 | TA501344.1100                 | TA601344.1100                 |
| 11,11                  |                       |                                    | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201344.1111                 | TA501344.1111                 | TA601344.1111                 |
| 11,20                  | M12x0,75              | M12 (GAL)                          | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201344.1120                 | TA501344.1120                 | TA601344.1120                 |
| 11,25                  |                       | M12                                | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201344.1125                 | TA501344.1125                 | TA601344.1125                 |
| 11,30                  |                       | M12x1,5 (GAL)                      | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201344.1130                 | TA501344.1130                 | TA601344.1130                 |
| 11,35                  |                       | M12x1,5                            | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201344.1135                 | TA501344.1135                 | TA601344.1135                 |
| 11,40                  |                       | M12x1,25 (GAL)                     | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201344.1140                 | TA501344.1140                 | TA601344.1140                 |
| 11,45                  |                       | M12x1,25                           | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201344.1145                 | TA501344.1145                 | TA601344.1145                 |
| 11,50                  | 1/2-20                |                                    | 102            | 55             | 40             | 45             | 2,0            | 12                     | TA201344.1150                 | TA501344.1150                 | TA601344.1150                 |
| 11,51                  |                       |                                    | 102            | 55             | 40             | 45             | 2,0            | 12                     | TA201344.1151                 | TA501344.1151                 | TA601344.1151                 |
| 11,60                  |                       | M12x1                              | 102            | 55             | 40             | 45             | 2,0            | 12                     | TA201344.1160                 | TA501344.1160                 | TA601344.1160                 |
| 11,80                  | G1/4                  | 1/2-13                             | 102            | 55             | 40             | 45             | 2,0            | 12                     | TA201344.1180                 | TA501344.1180                 | TA601344.1180                 |
| 11,90                  |                       |                                    | 102            | 55             | 40             | 45             | 2,0            | 12                     | TA201344.1190                 | TA501344.1190                 | TA601344.1190                 |
| 11,91                  |                       |                                    | 102            | 55             | 40             | 45             | 2,0            | 12                     | TA201344.1191                 | TA501344.1191                 | TA601344.1191                 |
| 12,00                  | M14                   |                                    | 102            | 55             | 40             | 45             | 2,0            | 12                     | TA201344.1200                 | TA501344.1200                 | TA601344.1200                 |
| 12,10                  | MJ13x1                | 1/2-20 (GAL)                       | 107            | 60             | 43             | 45             | 2,1            | 14                     | TA201344.1210                 | TA501344.1210                 | TA601344.1210                 |
| 12,15                  |                       | 1/2-20                             | 107            | 60             | 43             | 45             | 2,1            | 14                     | TA201344.1215                 | TA501344.1215                 | TA601344.1215                 |
| 12,20                  | 9/16-12               |                                    | 107            | 60             | 43             | 45             | 2,1            | 14                     | TA201344.1220                 | TA501344.1220                 | TA601344.1220                 |
| 12,30                  |                       |                                    | 107            | 60             | 43             | 45             | 2,1            | 14                     | TA201344.1230                 | TA501344.1230                 | TA601344.1230                 |
| 12,50                  | M14x1,5               | G1/4 (GAL)                         | 107            | 60             | 43             | 45             | 2,1            | 14                     | TA201344.1250                 | TA501344.1250                 | TA601344.1250                 |
| 12,55                  |                       | M13x1 (GAL) / G1/4                 | 107            | 60             | 43             | 45             | 2,1            | 14                     | TA201344.1255                 | TA501344.1255                 | TA601344.1255                 |
| 12,60                  | MJ14x1,5              | M13x1                              | 107            | 60             | 43             | 45             | 2,1            | 14                     | TA201344.1260                 | TA501344.1260                 | TA601344.1260                 |
| 12,70                  |                       | M13x0,75                           | 107            | 60             | 43             | 45             | 2,2            | 14                     | TA201344.1270                 | TA501344.1270                 | TA601344.1270                 |
| 12,80                  | M14x1,25              |                                    | 107            | 60             | 43             | 45             | 2,2            | 14                     | TA201344.1280                 | TA501344.1280                 | TA601344.1280                 |
| 12,90                  | MJ14x1,25 / 9/16-18   |                                    | 107            | 60             | 43             | 45             | 2,2            | 14                     | TA201344.1290                 | TA501344.1290                 | TA601344.1290                 |
| 13,00                  | M14x1                 |                                    | 107            | 60             | 43             | 45             | 2,2            | 14                     | TA201344.1300                 | TA501344.1300                 | TA601344.1300                 |
| 13,10                  | MJ14x1                | M14                                | 107            | 60             | 43             | 45             | 2,2            | 14                     | TA201344.1310                 | TA501344.1310                 | TA601344.1310                 |
| 13,30                  |                       | 9/16-12                            | 107            | 60             | 43             | 45             | 2,3            | 14                     | TA201344.1330                 | TA501344.1330                 | TA601344.1330                 |
| 13,35                  |                       | M14x1,5                            | 107            | 60             | 43             | 45             | 2,3            | 14                     | TA201344.1335                 | TA501344.1335                 | TA601344.1335                 |
| 13,45                  |                       | M14x1,25                           | 107            | 60             | 43             | 45             | 2,3            | 14                     | TA201344.1345                 | TA501344.1345                 | TA601344.1345                 |
| 13,49                  |                       |                                    | 107            | 60             | 43             | 45             | 2,3            | 14                     | TA201344.1349                 | TA501344.1349                 | TA601344.1349                 |

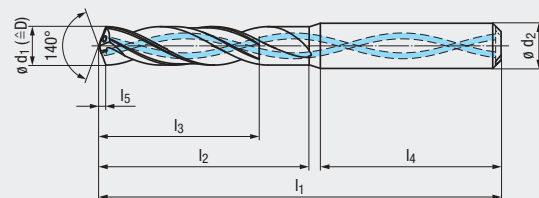
Ø 13,50 mm - Ø 18,00 mm ➡

- Product Finder
- $v_c / f$
- BASIC
- STEEL
- INOX
- GG
- HCUT
- SpotDrill
- Zubehör  
Accessories
- 3 x D
- 5 x D
- 6 x D
- 8 x D
- 12 x D
- 2-3,5 x D

### BasicDrill-BD101

## 3 x D

Kurze Ausführung  
Short design



VHM  
Carbide

TIALN

DIN  
6537 K

R30



DIN 6535



BASIC  
Universal  
application



## 3 x D

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material

» 14

|   |         |   |                  |   |         |
|---|---------|---|------------------|---|---------|
| P | 1.1-5.1 | M | 1.1-3.1          | K | 1.1-4.2 |
| N | 1.1-2.3 | S | 1.2-1.3, 2.2-2.3 | H | 1.1-1.3 |

|                         | Gewindebohrer<br>Taps                                                             | Gewindeformer<br>Cold-forming taps                                                |       |       |       |       |       |                         |               | BasicDrill<br>BD101-3xD | BasicDrill<br>BD101-3xD | BasicDrill<br>BD101-3xD |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------------------------|---------------|-------------------------|-------------------------|-------------------------|
| $\varnothing d_1$<br>m7 |  |  |       |       |       |       |       | $\varnothing d_2$<br>h6 | HA            | HE                      | HB                      |                         |
|                         |                                                                                   |                                                                                   | $l_1$ | $l_2$ | $l_3$ | $l_4$ | $l_5$ |                         |               |                         |                         |                         |
| 13,50                   | 5/8-11                                                                            |                                                                                   | 107   | 60    | 43    | 45    | 2,3   | 14                      | TA201344.1350 | TA501344.1350           | TA601344.1350           |                         |
| 13,60                   | MJ15x1,5                                                                          | M14x1 / 9/16-18 (GAL)                                                             | 107   | 60    | 43    | 45    | 2,3   | 14                      | TA201344.1360 | TA501344.1360           | TA601344.1360           |                         |
| 13,65                   |                                                                                   | 9/16-18                                                                           | 107   | 60    | 43    | 45    | 2,3   | 14                      | TA201344.1365 | TA501344.1365           | TA601344.1365           |                         |
| 13,70                   |                                                                                   | M14x0,75                                                                          | 107   | 60    | 43    | 45    | 2,3   | 14                      | TA201344.1370 | TA501344.1370           | TA601344.1370           |                         |
| 13,80                   |                                                                                   |                                                                                   | 107   | 60    | 43    | 45    | 2,3   | 14                      | TA201344.1380 | TA501344.1380           | TA601344.1380           |                         |
| 13,89                   |                                                                                   |                                                                                   | 107   | 60    | 43    | 45    | 2,4   | 14                      | TA201344.1389 | TA501344.1389           | TA601344.1389           |                         |
| 14,00                   | M16 / M15x1                                                                       |                                                                                   | 107   | 60    | 43    | 45    | 2,4   | 14                      | TA201344.1400 | TA501344.1400           | TA601344.1400           |                         |
| 14,10                   | MJ15x1                                                                            |                                                                                   | 115   | 65    | 45    | 48    | 2,4   | 16                      | TA201344.1410 | TA501344.1410           | TA601344.1410           |                         |
| 14,20                   | M15x0,75                                                                          |                                                                                   | 115   | 65    | 45    | 48    | 2,4   | 16                      | TA201344.1420 | TA501344.1420           | TA601344.1420           |                         |
| 14,29                   |                                                                                   |                                                                                   | 115   | 65    | 45    | 48    | 2,4   | 16                      | TA201344.1429 | TA501344.1429           | TA601344.1429           |                         |
| 14,50                   | M16x1,5 / 5/8-18                                                                  |                                                                                   | 115   | 65    | 45    | 48    | 2,5   | 16                      | TA201344.1450 | TA501344.1450           | TA601344.1450           |                         |
| 14,60                   | MJ16x1,5                                                                          | M15x1                                                                             | 115   | 65    | 45    | 48    | 2,5   | 16                      | TA201344.1460 | TA501344.1460           | TA601344.1460           |                         |
| 14,68                   |                                                                                   |                                                                                   | 115   | 65    | 45    | 48    | 2,5   | 16                      | TA201344.1468 | TA501344.1468           | TA601344.1468           |                         |
| 14,70                   |                                                                                   | M15x0,75                                                                          | 115   | 65    | 45    | 48    | 2,5   | 16                      | TA201344.1470 | TA501344.1470           | TA601344.1470           |                         |
| 14,80                   |                                                                                   | 5/8-11                                                                            | 115   | 65    | 45    | 48    | 2,5   | 16                      | TA201344.1480 | TA501344.1480           | TA601344.1480           |                         |
| 15,00                   | M16x1                                                                             |                                                                                   | 115   | 65    | 45    | 48    | 2,5   | 16                      | TA201344.1500 | TA501344.1500           | TA601344.1500           |                         |
| 15,08                   |                                                                                   |                                                                                   | 115   | 65    | 45    | 48    | 2,6   | 16                      | TA201344.1508 | TA501344.1508           | TA601344.1508           |                         |
| 15,10                   | MJ16x1                                                                            | M16                                                                               | 115   | 65    | 45    | 48    | 2,6   | 16                      | TA201344.1510 | TA501344.1510           | TA601344.1510           |                         |
| 15,20                   | M16x0,75                                                                          | 5/8-18 (GAL)                                                                      | 115   | 65    | 45    | 48    | 2,6   | 16                      | TA201344.1520 | TA501344.1520           | TA601344.1520           |                         |
| 15,25                   | G3/8                                                                              | 5/8-18                                                                            | 115   | 65    | 45    | 48    | 2,6   | 16                      | TA201344.1525 | TA501344.1525           | TA601344.1525           |                         |
| 15,35                   |                                                                                   | M16x1,5                                                                           | 115   | 65    | 45    | 48    | 2,6   | 16                      | TA201344.1535 | TA501344.1535           | TA601344.1535           |                         |
| 15,50                   | M18                                                                               |                                                                                   | 115   | 65    | 45    | 48    | 2,6   | 16                      | TA201344.1550 | TA501344.1550           | TA601344.1550           |                         |
| 15,60                   |                                                                                   | M16x1                                                                             | 115   | 65    | 45    | 48    | 2,6   | 16                      | TA201344.1560 | TA501344.1560           | TA601344.1560           |                         |
| 15,80                   | MJ18x2,5                                                                          |                                                                                   | 115   | 65    | 45    | 48    | 2,7   | 16                      | TA201344.1580 | TA501344.1580           | TA601344.1580           |                         |
| 15,88                   |                                                                                   |                                                                                   | 115   | 65    | 45    | 48    | 2,7   | 16                      | TA201344.1588 | TA501344.1588           | TA601344.1588           |                         |
| 16,00                   | M18x2                                                                             |                                                                                   | 115   | 65    | 45    | 48    | 2,7   | 16                      | TA201344.1600 | TA501344.1600           | TA601344.1600           |                         |
| 16,27                   |                                                                                   |                                                                                   | 123   | 73    | 51    | 48    | 2,8   | 18                      | TA201344.1627 | TA501344.1627           | TA601344.1627           |                         |
| 16,50                   | M18x1,5 / 3/4-10                                                                  |                                                                                   | 123   | 73    | 51    | 48    | 2,8   | 18                      | TA201344.1650 | TA501344.1650           | TA601344.1650           |                         |
| 16,67                   |                                                                                   |                                                                                   | 123   | 73    | 51    | 48    | 2,8   | 18                      | TA201344.1667 | TA501344.1667           | TA601344.1667           |                         |
| 17,00                   | M18x1                                                                             |                                                                                   | 123   | 73    | 51    | 48    | 2,9   | 18                      | TA201344.1700 | TA501344.1700           | TA601344.1700           |                         |
| 17,46                   |                                                                                   |                                                                                   | 123   | 73    | 51    | 48    | 3,0   | 18                      | TA201344.1746 | TA501344.1746           | TA601344.1746           |                         |
| 17,50                   | M20 / 3/4-16                                                                      |                                                                                   | 123   | 73    | 51    | 48    | 3,0   | 18                      | TA201344.1750 | TA501344.1750           | TA601344.1750           |                         |
| 18,00                   | M20x2                                                                             |                                                                                   | 123   | 73    | 51    | 48    | 3,1   | 18                      | TA201344.1800 | TA501344.1800           | TA601344.1800           |                         |

◀  $\emptyset$  3,00 mm -  $\emptyset$  13,49 mm



Hydrodehnspannfutter  
siehe Seite 68 - 69

Hydraulic expansion chucks,  
see page 68 - 69



## BasicDrill-BD101

VHM  
Carbide

TIALN

DIN  
6537 L

R30

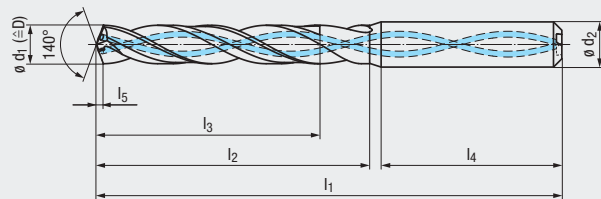
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4FF

140°

IT9-IT10

DIN 6535

HA  
HB  
HEBASIC  
Universal  
application**5 x D** Lange Ausführung  
Long designBohrtiefe  
Drill depthEinsatzgebiete – Material  
Applications – material

» 14

**5 x D**

|           |                    |           |
|-----------|--------------------|-----------|
| P 1.1-5.1 | M 1.1-3.1          | K 1.1-4.2 |
| N 1.1-2.3 | S 1.2-1.3, 2.2-2.3 | H 1.1-1.3 |

| ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps   | Gewindeformer<br>Cold-forming taps |                |                |                |                |                |    | ø d <sub>2</sub><br>h6 | BasicDrill<br>BD101-5xD | BasicDrill<br>BD101-5xD | BasicDrill<br>BD101-5xD |
|------------------------|-------------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|----|------------------------|-------------------------|-------------------------|-------------------------|
|                        |                         |                                    | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | HA |                        | HE                      | HB                      |                         |
| 3,00                   | M3,5x0,5 / MJ3,5x0,6    |                                    | 66             | 28             | 23             | 36             | 0,5            | 6  | TA211344.0300          | TA511344.0300           | TA611344.0300           |                         |
| 3,10                   |                         |                                    | 66             | 28             | 23             | 36             | 0,5            | 6  | TA211344.0310          | TA511344.0310           | TA611344.0310           |                         |
| 3,15                   | M3,5x0,35               | #6-32                              | 66             | 28             | 23             | 36             | 0,5            | 6  | TA211344.0315          | TA511344.0315           | TA611344.0315           |                         |
| 3,18                   |                         |                                    | 66             | 28             | 23             | 36             | 0,5            | 6  | TA211344.0318          | TA511344.0318           | TA611344.0318           |                         |
| 3,20                   | MJ3,5x0,35              |                                    | 66             | 28             | 23             | 36             | 0,5            | 6  | TA211344.0320          | TA511344.0320           | TA611344.0320           |                         |
| 3,22                   |                         | #6-40                              | 66             | 28             | 23             | 36             | 0,5            | 6  | TA211344.0322          | TA511344.0322           | TA611344.0322           |                         |
| 3,25                   |                         | M3,5                               | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211344.0325          | TA511344.0325           | TA611344.0325           |                         |
| 3,30                   | M4                      | M3,5x0,5                           | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211344.0330          | TA511344.0330           | TA611344.0330           |                         |
| 3,35                   |                         |                                    | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211344.0335          | TA511344.0335           | TA611344.0335           |                         |
| 3,38                   |                         | M3,5x0,35                          | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211344.0338          | TA511344.0338           | TA611344.0338           |                         |
| 3,40                   | MJ4x0,7                 |                                    | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211344.0340          | TA511344.0340           | TA611344.0340           |                         |
| 3,50                   | M4x0,5 / #8-32 / #8-36  |                                    | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211344.0350          | TA511344.0350           | TA611344.0350           |                         |
| 3,57                   |                         |                                    | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211344.0357          | TA511344.0357           | TA611344.0357           |                         |
| 3,60                   | MJ4x0,5                 |                                    | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211344.0360          | TA511344.0360           | TA611344.0360           |                         |
| 3,65                   | M4x0,35                 |                                    | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211344.0365          | TA511344.0365           | TA611344.0365           |                         |
| 3,70                   | M4,5                    | M4                                 | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211344.0370          | TA511344.0370           | TA611344.0370           |                         |
| 3,80                   |                         | M4x0,5 / #8-32                     | 74             | 36             | 29             | 36             | 0,6            | 6  | TA211344.0380          | TA511344.0380           | TA611344.0380           |                         |
| 3,85                   |                         | #8-36                              | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211344.0385          | TA511344.0385           | TA611344.0385           |                         |
| 3,88                   |                         | M4x0,35                            | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211344.0388          | TA511344.0388           | TA611344.0388           |                         |
| 3,90                   | MJ4,5x0,75 / #10-24     |                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211344.0390          | TA511344.0390           | TA611344.0390           |                         |
| 3,97                   |                         |                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211344.0397          | TA511344.0397           | TA611344.0397           |                         |
| 4,00                   |                         |                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211344.0400          | TA511344.0400           | TA611344.0400           |                         |
| 4,04                   |                         |                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211344.0404          | TA511344.0404           | TA611344.0404           |                         |
| 4,10                   | MJ4,5x0,5 / #10-32      |                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211344.0410          | TA511344.0410           | TA611344.0410           |                         |
| 4,15                   | M5x0,9                  |                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211344.0415          | TA511344.0415           | TA611344.0415           |                         |
| 4,20                   | M5 / M5x0,75            | M4,5                               | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211344.0420          | TA511344.0420           | TA611344.0420           |                         |
| 4,30                   | MJ5x0,8                 | M4,5x0,5 / #10-24 (GAL)            | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211344.0430          | TA511344.0430           | TA611344.0430           |                         |
| 4,35                   |                         | #10-24                             | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211344.0435          | TA511344.0435           | TA611344.0435           |                         |
| 4,37                   |                         |                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211344.0437          | TA511344.0437           | TA611344.0437           |                         |
| 4,40                   |                         |                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211344.0440          | TA511344.0440           | TA611344.0440           |                         |
| 4,45                   |                         | #10-32                             | 74             | 36             | 29             | 36             | 0,8            | 6  | TA211344.0445          | TA511344.0445           | TA611344.0445           |                         |
| 4,50                   | M5x0,5 / #12-24         |                                    | 74             | 36             | 29             | 36             | 0,8            | 6  | TA211344.0450          | TA511344.0450           | TA611344.0450           |                         |
| 4,60                   | M5,5 / MJ5x0,5 / #12-28 |                                    | 74             | 36             | 29             | 36             | 0,8            | 6  | TA211344.0460          | TA511344.0460           | TA611344.0460           |                         |
| 4,65                   |                         | M5                                 | 74             | 36             | 29             | 36             | 0,8            | 6  | TA211344.0465          | TA511344.0465           | TA611344.0465           |                         |
| 4,70                   |                         | M5x0,75                            | 74             | 36             | 29             | 36             | 0,8            | 6  | TA211344.0470          | TA511344.0470           | TA611344.0470           |                         |
| 4,76                   |                         |                                    | 82             | 44             | 35             | 36             | 0,8            | 6  | TA211344.0476          | TA511344.0476           | TA611344.0476           |                         |
| 4,80                   |                         | M5x0,5                             | 82             | 44             | 35             | 36             | 0,8            | 6  | TA211344.0480          | TA511344.0480           | TA611344.0480           |                         |
| 4,90                   |                         |                                    | 82             | 44             | 35             | 36             | 0,8            | 6  | TA211344.0490          | TA511344.0490           | TA611344.0490           |                         |
| 5,00                   | M6                      | #12-24                             | 82             | 44             | 35             | 36             | 0,8            | 6  | TA211344.0500          | TA511344.0500           | TA611344.0500           |                         |
| 5,10                   | MJ6x1 / 1/4-20          | M5,5 / #12-28                      | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211344.0510          | TA511344.0510           | TA611344.0510           |                         |
| 5,11                   |                         |                                    | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211344.0511          | TA511344.0511           | TA611344.0511           |                         |
| 5,16                   |                         |                                    | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211344.0516          | TA511344.0516           | TA611344.0516           |                         |
| 5,20                   | M6x0,75                 |                                    | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211344.0520          | TA511344.0520           | TA611344.0520           |                         |
| 5,30                   |                         | M5,5x0,5                           | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211344.0530          | TA511344.0530           | TA611344.0530           |                         |
| 5,40                   |                         |                                    | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211344.0540          | TA511344.0540           | TA611344.0540           |                         |
| 5,41                   |                         |                                    | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211344.0541          | TA511344.0541           | TA611344.0541           |                         |
| 5,50                   | M6x0,5 / 1/4-28         |                                    | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211344.0550          | TA511344.0550           | TA611344.0550           |                         |
| 5,55                   |                         | M6 (GAL)                           | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211344.0555          | TA511344.0555           | TA611344.0555           |                         |
| 5,56                   |                         |                                    | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211344.0556          | TA511344.0556           | TA611344.0556           |                         |

ø 5,60 mm - ø 18,00 mm →

Product  
Finder

$v_c / f$

BASIC

STEEL

INOX

GG

HCUT

SpotDrill

Zubehör  
Accessories

3 x D

5 x D

6 x D

8 x D

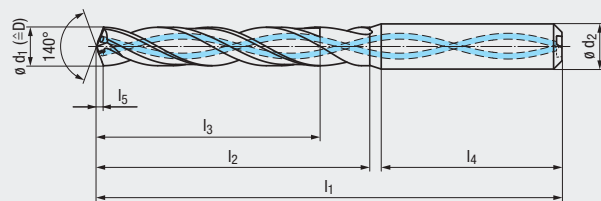
12 x D

2-3,5 x D



### BasicDrill-BD101

**5 x D** Lange Ausführung  
Long design



VHM  
Carbide

TIALN

DIN  
6537 L

R30



DIN 6535



BASIC  
Universal  
application



**5 x D**

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material

» 14

**P** 1.1-5.1 **M** 1.1-3.1 **K** 1.1-4.2  
**N** 1.1-2.3 **S** 1.2-1.3, 2.2-2.3 **H** 1.1-1.3

| $\emptyset d_1$<br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps |       |       |       |       |       | $\emptyset d_2$<br>h6 | BasicDrill<br>BD101-5xD<br>HA | BasicDrill<br>BD101-5xD<br>HE | BasicDrill<br>BD101-5xD<br>HB |
|-----------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-----------------------|-------------------------------|-------------------------------|-------------------------------|
|                       |                       |                                    | $l_1$ | $l_2$ | $l_3$ | $l_4$ | $l_5$ |                       |                               |                               |                               |
| 5,60                  | MJ6x0,5               | M6                                 | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211344.0560                 | TA511344.0560                 | TA611344.0560                 |
| 5,70                  |                       | M6x0,75 / 1/4-20 (GAL)             | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211344.0570                 | TA511344.0570                 | TA611344.0570                 |
| 5,75                  |                       | 1/4-20                             | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211344.0575                 | TA511344.0575                 | TA611344.0575                 |
| 5,80                  |                       | M6x0,5                             | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211344.0580                 | TA511344.0580                 | TA611344.0580                 |
| 5,90                  |                       |                                    | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211344.0590                 | TA511344.0590                 | TA611344.0590                 |
| 5,95                  |                       | 1/4-28                             | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211344.0595                 | TA511344.0595                 | TA611344.0595                 |
| 6,00                  | M7                    |                                    | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211344.0600                 | TA511344.0600                 | TA611344.0600                 |
| 6,10                  | MJ7x1                 |                                    | 91    | 53    | 43    | 36    | 1,0   | 8                     | TA211344.0610                 | TA511344.0610                 | TA611344.0610                 |
| 6,20                  | M7x0,75               |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211344.0620                 | TA511344.0620                 | TA611344.0620                 |
| 6,30                  |                       |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211344.0630                 | TA511344.0630                 | TA611344.0630                 |
| 6,35                  | MJ7x0,75              |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211344.0635                 | TA511344.0635                 | TA611344.0635                 |
| 6,40                  |                       |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211344.0640                 | TA511344.0640                 | TA611344.0640                 |
| 6,50                  | M7x0,5                |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211344.0650                 | TA511344.0650                 | TA611344.0650                 |
| 6,53                  |                       |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211344.0653                 | TA511344.0653                 | TA611344.0653                 |
| 6,60                  | 5/16-18               | M7                                 | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211344.0660                 | TA511344.0660                 | TA611344.0660                 |
| 6,70                  |                       | M7x0,75                            | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211344.0670                 | TA511344.0670                 | TA611344.0670                 |
| 6,75                  |                       |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211344.0675                 | TA511344.0675                 | TA611344.0675                 |
| 6,80                  | M8 / G1/16            | M7x0,5                             | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211344.0680                 | TA511344.0680                 | TA611344.0680                 |
| 6,90                  | MJ8x1,25 / 5/16-24    |                                    | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211344.0690                 | TA511344.0690                 | TA611344.0690                 |
| 7,00                  | M8x1                  |                                    | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211344.0700                 | TA511344.0700                 | TA611344.0700                 |
| 7,10                  | MJ8x1                 |                                    | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211344.0710                 | TA511344.0710                 | TA611344.0710                 |
| 7,15                  |                       |                                    | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211344.0715                 | TA511344.0715                 | TA611344.0715                 |
| 7,20                  | M8x0,75               |                                    | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211344.0720                 | TA511344.0720                 | TA611344.0720                 |
| 7,25                  |                       | 5/16-18 (GAL) / G1/16              | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211344.0725                 | TA511344.0725                 | TA611344.0725                 |
| 7,30                  |                       | 5/16-18                            | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211344.0730                 | TA511344.0730                 | TA611344.0730                 |
| 7,40                  |                       | M8 (GAL) / 5/16-24 (GAL)           | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211344.0740                 | TA511344.0740                 | TA611344.0740                 |
| 7,45                  |                       | M8 / 5/16-24                       | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211344.0745                 | TA511344.0745                 | TA611344.0745                 |
| 7,50                  | M8x0,5                |                                    | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211344.0750                 | TA511344.0750                 | TA611344.0750                 |
| 7,54                  |                       |                                    | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211344.0754                 | TA511344.0754                 | TA611344.0754                 |
| 7,60                  |                       | M8x1                               | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211344.0760                 | TA511344.0760                 | TA611344.0760                 |
| 7,70                  |                       | M8x0,75                            | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211344.0770                 | TA511344.0770                 | TA611344.0770                 |
| 7,80                  | M9                    | M8x0,5                             | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211344.0780                 | TA511344.0780                 | TA611344.0780                 |
| 7,90                  | MJ9x1,25              |                                    | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211344.0790                 | TA511344.0790                 | TA611344.0790                 |
| 7,94                  |                       |                                    | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211344.0794                 | TA511344.0794                 | TA611344.0794                 |
| 8,00                  | M9x1 / 3/8-16         |                                    | 91    | 53    | 43    | 36    | 1,4   | 8                     | TA211344.0800                 | TA511344.0800                 | TA611344.0800                 |
| 8,10                  | MJ9x1                 |                                    | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211344.0810                 | TA511344.0810                 | TA611344.0810                 |
| 8,20                  | M9x0,75               |                                    | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211344.0820                 | TA511344.0820                 | TA611344.0820                 |
| 8,30                  |                       |                                    | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211344.0830                 | TA511344.0830                 | TA611344.0830                 |
| 8,33                  |                       |                                    | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211344.0833                 | TA511344.0833                 | TA611344.0833                 |
| 8,40                  |                       | M9 (GAL)                           | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211344.0840                 | TA511344.0840                 | TA611344.0840                 |
| 8,45                  |                       | M9                                 | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211344.0845                 | TA511344.0845                 | TA611344.0845                 |
| 8,50                  | M10 / M9x0,5 / 3/8-24 |                                    | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211344.0850                 | TA511344.0850                 | TA611344.0850                 |
| 8,60                  | MJ10x1,5              | M9x1                               | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211344.0860                 | TA511344.0860                 | TA611344.0860                 |
| 8,70                  |                       | M9x0,75                            | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211344.0870                 | TA511344.0870                 | TA611344.0870                 |
| 8,73                  |                       |                                    | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211344.0873                 | TA511344.0873                 | TA611344.0873                 |
| 8,80                  | M10x1,25 / G1/8       | M9x0,5 / 3/8-16                    | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211344.0880                 | TA511344.0880                 | TA611344.0880                 |
| 8,90                  | MJ10x1,25             |                                    | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211344.0890                 | TA511344.0890                 | TA611344.0890                 |
| 9,00                  | M10x1                 | 3/8-24 (GAL)                       | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211344.0900                 | TA511344.0900                 | TA611344.0900                 |
| 9,05                  |                       | 3/8-24                             | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211344.0905                 | TA511344.0905                 | TA611344.0905                 |

## BasicDrill-BD101

VHM  
Carbide

TIALN

DIN  
6537 L

R30

Z2

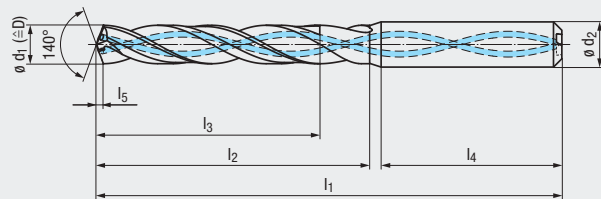
4FF



140°



DIN 6535

HA  
HB  
HEBASIC  
Universal  
application5 x D Lange Ausführung  
Long designBohrtiefe  
Drill depthEinsatzgebiete – Material  
Applications – material

» 14

5 x D

|           |                    |           |
|-----------|--------------------|-----------|
| P 1.1-5.1 | M 1.1-3.1          | K 1.1-4.2 |
| N 1.1-2.3 | S 1.2-1.3, 2.2-2.3 | H 1.1-1.3 |

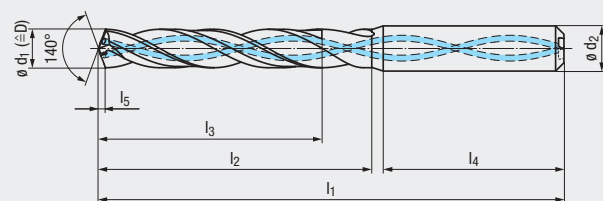
| ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps                                                              | Gewindeformer<br>Cold-forming taps                                                 |                |                |                |                |                |    | ø d <sub>2</sub><br>h6 | BasicDrill<br>BD101-5xD | BasicDrill<br>BD101-5xD | BasicDrill<br>BD101-5xD |
|------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----|------------------------|-------------------------|-------------------------|-------------------------|
|                        |  |  | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | HA |                        | HE                      | HB                      |                         |
| 9,10                   | MJ10x1                                                                             |                                                                                    | 103            | 61             | 49             | 40             | 1,5            | 10 | TA211344.0910          | TA511344.0910           | TA611344.0910           |                         |
| 9,13                   |                                                                                    |                                                                                    | 103            | 61             | 49             | 40             | 1,5            | 10 | TA211344.0913          | TA511344.0913           | TA611344.0913           |                         |
| 9,20                   | M10x0,75                                                                           |                                                                                    | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211344.0920          | TA511344.0920           | TA611344.0920           |                         |
| 9,30                   |                                                                                    | M10 (GAL)                                                                          | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211344.0930          | TA511344.0930           | TA611344.0930           |                         |
| 9,35                   | MJ10x0,75                                                                          | M10                                                                                | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211344.0935          | TA511344.0935           | TA611344.0935           |                         |
| 9,40                   | 7/16-14                                                                            | M10x1,25 (GAL)                                                                     | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211344.0940          | TA511344.0940           | TA611344.0940           |                         |
| 9,45                   |                                                                                    | M10x1,25                                                                           | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211344.0945          | TA511344.0945           | TA611344.0945           |                         |
| 9,50                   | M11 / M10x0,5                                                                      |                                                                                    | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211344.0950          | TA511344.0950           | TA611344.0950           |                         |
| 9,53                   |                                                                                    |                                                                                    | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211344.0953          | TA511344.0953           | TA611344.0953           |                         |
| 9,60                   | MJ10x0,5 / MJ11x1,5                                                                | M10x1                                                                              | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211344.0960          | TA511344.0960           | TA611344.0960           |                         |
| 9,70                   |                                                                                    | M10x0,75                                                                           | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211344.0970          | TA511344.0970           | TA611344.0970           |                         |
| 9,80                   |                                                                                    | M10x0,5                                                                            | 103            | 61             | 49             | 40             | 1,7            | 10 | TA211344.0980          | TA511344.0980           | TA611344.0980           |                         |
| 9,90                   | MJ11x1,25 / 7/16-20                                                                |                                                                                    | 103            | 61             | 49             | 40             | 1,7            | 10 | TA211344.0990          | TA511344.0990           | TA611344.0990           |                         |
| 9,92                   |                                                                                    |                                                                                    | 103            | 61             | 49             | 40             | 1,7            | 10 | TA211344.0992          | TA511344.0992           | TA611344.0992           |                         |
| 10,00                  | M11x1                                                                              |                                                                                    | 103            | 61             | 49             | 40             | 1,7            | 10 | TA211344.1000          | TA511344.1000           | TA611344.1000           |                         |
| 10,10                  | MJ11x1                                                                             |                                                                                    | 118            | 71             | 56             | 45             | 1,7            | 12 | TA211344.1010          | TA511344.1010           | TA611344.1010           |                         |
| 10,20                  | M12 / M11x0,75                                                                     | 7/16-14 (GAL)                                                                      | 118            | 71             | 56             | 45             | 1,7            | 12 | TA211344.1020          | TA511344.1020           | TA611344.1020           |                         |
| 10,25                  |                                                                                    | 7/16-14                                                                            | 118            | 71             | 56             | 45             | 1,7            | 12 | TA211344.1025          | TA511344.1025           | TA611344.1025           |                         |
| 10,30                  |                                                                                    | M11 (GAL)                                                                          | 118            | 71             | 56             | 45             | 1,7            | 12 | TA211344.1030          | TA511344.1030           | TA611344.1030           |                         |
| 10,32                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211344.1032          | TA511344.1032           | TA611344.1032           |                         |
| 10,35                  | MJ11x0,75                                                                          | M11                                                                                | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211344.1035          | TA511344.1035           | TA611344.1035           |                         |
| 10,40                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211344.1040          | TA511344.1040           | TA611344.1040           |                         |
| 10,50                  | M12x1,5                                                                            | 7/16-20 (GAL)                                                                      | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211344.1050          | TA511344.1050           | TA611344.1050           |                         |
| 10,55                  |                                                                                    | M11x1 (GAL) / 7/16-20                                                              | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211344.1055          | TA511344.1055           | TA611344.1055           |                         |
| 10,72                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211344.1072          | TA511344.1072           | TA611344.1072           |                         |
| 10,80                  | M12x1,25 / 1/2-13                                                                  |                                                                                    | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211344.1080          | TA511344.1080           | TA611344.1080           |                         |
| 10,90                  | MJ12x1,25                                                                          |                                                                                    | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211344.1090          | TA511344.1090           | TA611344.1090           |                         |
| 11,00                  | M12x1                                                                              |                                                                                    | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211344.1100          | TA511344.1100           | TA611344.1100           |                         |
| 11,11                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211344.1111          | TA511344.1111           | TA611344.1111           |                         |
| 11,20                  | M12x0,75                                                                           | M12 (GAL)                                                                          | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211344.1120          | TA511344.1120           | TA611344.1120           |                         |
| 11,25                  |                                                                                    | M12                                                                                | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211344.1125          | TA511344.1125           | TA611344.1125           |                         |
| 11,30                  |                                                                                    | M12x1,5 (GAL)                                                                      | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211344.1130          | TA511344.1130           | TA611344.1130           |                         |
| 11,35                  |                                                                                    | M12x1,5                                                                            | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211344.1135          | TA511344.1135           | TA611344.1135           |                         |
| 11,40                  |                                                                                    | M12x1,25 (GAL)                                                                     | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211344.1140          | TA511344.1140           | TA611344.1140           |                         |
| 11,45                  |                                                                                    | M12x1,25                                                                           | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211344.1145          | TA511344.1145           | TA611344.1145           |                         |
| 11,50                  | 1/2-20                                                                             |                                                                                    | 118            | 71             | 56             | 45             | 2,0            | 12 | TA211344.1150          | TA511344.1150           | TA611344.1150           |                         |
| 11,51                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 2,0            | 12 | TA211344.1151          | TA511344.1151           | TA611344.1151           |                         |
| 11,60                  |                                                                                    | M12x1                                                                              | 118            | 71             | 56             | 45             | 2,0            | 12 | TA211344.1160          | TA511344.1160           | TA611344.1160           |                         |
| 11,80                  | G1/4                                                                               | 1/2-13                                                                             | 118            | 71             | 56             | 45             | 2,0            | 12 | TA211344.1180          | TA511344.1180           | TA611344.1180           |                         |
| 11,90                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 2,0            | 12 | TA211344.1190          | TA511344.1190           | TA611344.1190           |                         |
| 11,91                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 2,0            | 12 | TA211344.1191          | TA511344.1191           | TA611344.1191           |                         |
| 12,00                  | M14                                                                                |                                                                                    | 118            | 71             | 56             | 45             | 2,0            | 12 | TA211344.1200          | TA511344.1200           | TA611344.1200           |                         |
| 12,10                  | MJ13x1                                                                             | 1/2-20 (GAL)                                                                       | 124            | 77             | 60             | 45             | 2,1            | 14 | TA211344.1210          | TA511344.1210           | TA611344.1210           |                         |
| 12,15                  |                                                                                    | 1/2-20                                                                             | 124            | 77             | 60             | 45             | 2,1            | 14 | TA211344.1215          | TA511344.1215           | TA611344.1215           |                         |
| 12,20                  | 9/16-12                                                                            |                                                                                    | 124            | 77             | 60             | 45             | 2,1            | 14 | TA211344.1220          | TA511344.1220           | TA611344.1220           |                         |
| 12,30                  |                                                                                    |                                                                                    | 124            | 77             | 60             | 45             | 2,1            | 14 | TA211344.1230          | TA511344.1230           | TA611344.1230           |                         |
| 12,50                  | M14x1,5                                                                            | G1/4 (GAL)                                                                         | 124            | 77             | 60             | 45             | 2,1            | 14 | TA211344.1250          | TA511344.1250           | TA611344.1250           |                         |
| 12,55                  |                                                                                    | M13x1 (GAL) / G1/4                                                                 | 124            | 77             | 60             | 45             | 2,1            | 14 | TA211344.1255          | TA511344.1255           | TA611344.1255           |                         |
| 12,60                  | MJ14x1,5                                                                           | M13x1                                                                              | 124            | 77             | 60             | 45             | 2,1            | 14 | TA211344.1260          | TA511344.1260           | TA611344.1260           |                         |

ø 12,70 mm - ø 18,00 mm →

- Product Finder
- $v_c / f$
- BASIC
- STEEL
- INOX
- GG
- HCUT
- SpotDrill
- Zubehör  
Accessories
- 3 x D
- 5 x D
- 6 x D
- 8 x D
- 12 x D
- 2-3,5 x D

### BasicDrill-BD101

**5 x D** Lange Ausführung  
Long design



VHM  
Carbide

TIALN

DIN  
6537 L

R30



DIN 6535



BASIC  
Universal  
application



**5 x D**

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material



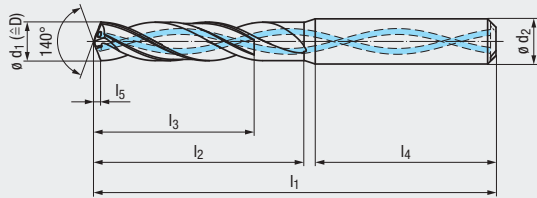
|   |         |   |                  |   |         |
|---|---------|---|------------------|---|---------|
| P | 1.1-5.1 | M | 1.1-3.1          | K | 1.1-4.2 |
| N | 1.1-2.3 | S | 1.2-1.3, 2.2-2.3 | H | 1.1-1.3 |

| Ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps                                                              | Gewindeformer<br>Cold-forming taps                                                 |                |                |                |                |                |    | Ø d <sub>2</sub><br>h6 | BasicDrill<br>BD101-5xD | BasicDrill<br>BD101-5xD | BasicDrill<br>BD101-5xD |
|------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----|------------------------|-------------------------|-------------------------|-------------------------|
|                        |  |  | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | HA |                        | HE                      | HB                      |                         |
| 12,70                  |                                                                                    | M13x0,75                                                                           | 124            | 77             | 60             | 45             | 2,2            | 14 | TA211344.1270          | TA511344.1270           | TA611344.1270           |                         |
| 12,80                  | M14x1,25                                                                           |                                                                                    | 124            | 77             | 60             | 45             | 2,2            | 14 | TA211344.1280          | TA511344.1280           | TA611344.1280           |                         |
| 12,90                  | MJ14x1,25 / 9/16-18                                                                |                                                                                    | 124            | 77             | 60             | 45             | 2,2            | 14 | TA211344.1290          | TA511344.1290           | TA611344.1290           |                         |
| 13,00                  | M14x1                                                                              |                                                                                    | 124            | 77             | 60             | 45             | 2,2            | 14 | TA211344.1300          | TA511344.1300           | TA611344.1300           |                         |
| 13,10                  | MJ14x1                                                                             | M14                                                                                | 124            | 77             | 60             | 45             | 2,2            | 14 | TA211344.1310          | TA511344.1310           | TA611344.1310           |                         |
| 13,30                  |                                                                                    | 9/16-12                                                                            | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211344.1330          | TA511344.1330           | TA611344.1330           |                         |
| 13,35                  |                                                                                    | M14x1,5                                                                            | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211344.1335          | TA511344.1335           | TA611344.1335           |                         |
| 13,45                  |                                                                                    | M14x1,25                                                                           | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211344.1345          | TA511344.1345           | TA611344.1345           |                         |
| 13,49                  |                                                                                    |                                                                                    | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211344.1349          | TA511344.1349           | TA611344.1349           |                         |
| 13,50                  | 5/8-11                                                                             |                                                                                    | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211344.1350          | TA511344.1350           | TA611344.1350           |                         |
| 13,60                  | MJ15x1,5                                                                           | M14x1 / 9/16-18 (GAL)                                                              | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211344.1360          | TA511344.1360           | TA611344.1360           |                         |
| 13,65                  |                                                                                    | 9/16-18                                                                            | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211344.1365          | TA511344.1365           | TA611344.1365           |                         |
| 13,70                  |                                                                                    | M14x0,75                                                                           | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211344.1370          | TA511344.1370           | TA611344.1370           |                         |
| 13,80                  |                                                                                    |                                                                                    | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211344.1380          | TA511344.1380           | TA611344.1380           |                         |
| 13,89                  |                                                                                    |                                                                                    | 124            | 77             | 60             | 45             | 2,4            | 14 | TA211344.1389          | TA511344.1389           | TA611344.1389           |                         |
| 14,00                  | M16 / M15x1                                                                        |                                                                                    | 124            | 77             | 60             | 45             | 2,4            | 14 | TA211344.1400          | TA511344.1400           | TA611344.1400           |                         |
| 14,10                  | MJ15x1                                                                             |                                                                                    | 133            | 83             | 63             | 48             | 2,4            | 16 | TA211344.1410          | TA511344.1410           | TA611344.1410           |                         |
| 14,20                  | M15x0,75                                                                           |                                                                                    | 133            | 83             | 63             | 48             | 2,4            | 16 | TA211344.1420          | TA511344.1420           | TA611344.1420           |                         |
| 14,29                  |                                                                                    |                                                                                    | 133            | 83             | 63             | 48             | 2,4            | 16 | TA211344.1429          | TA511344.1429           | TA611344.1429           |                         |
| 14,50                  | M16x1,5 / 5/8-18                                                                   |                                                                                    | 133            | 83             | 63             | 48             | 2,5            | 16 | TA211344.1450          | TA511344.1450           | TA611344.1450           |                         |
| 14,60                  | MJ16x1,5                                                                           | M15x1                                                                              | 133            | 83             | 63             | 48             | 2,5            | 16 | TA211344.1460          | TA511344.1460           | TA611344.1460           |                         |
| 14,68                  |                                                                                    |                                                                                    | 133            | 83             | 63             | 48             | 2,5            | 16 | TA211344.1468          | TA511344.1468           | TA611344.1468           |                         |
| 14,70                  |                                                                                    | M15x0,75                                                                           | 133            | 83             | 63             | 48             | 2,5            | 16 | TA211344.1470          | TA511344.1470           | TA611344.1470           |                         |
| 14,80                  |                                                                                    | 5/8-11                                                                             | 133            | 83             | 63             | 48             | 2,5            | 16 | TA211344.1480          | TA511344.1480           | TA611344.1480           |                         |
| 15,00                  | M16x1                                                                              |                                                                                    | 133            | 83             | 63             | 48             | 2,5            | 16 | TA211344.1500          | TA511344.1500           | TA611344.1500           |                         |
| 15,08                  |                                                                                    |                                                                                    | 133            | 83             | 63             | 48             | 2,6            | 16 | TA211344.1508          | TA511344.1508           | TA611344.1508           |                         |
| 15,10                  | MJ16x1                                                                             | M16                                                                                | 133            | 83             | 63             | 48             | 2,6            | 16 | TA211344.1510          | TA511344.1510           | TA611344.1510           |                         |
| 15,20                  | M16x0,75                                                                           | 5/8-18 (GAL)                                                                       | 133            | 83             | 63             | 48             | 2,6            | 16 | TA211344.1520          | TA511344.1520           | TA611344.1520           |                         |
| 15,25                  | G3/8                                                                               | 5/8-18                                                                             | 133            | 83             | 63             | 48             | 2,6            | 16 | TA211344.1525          | TA511344.1525           | TA611344.1525           |                         |
| 15,35                  |                                                                                    | M16x1,5                                                                            | 133            | 83             | 63             | 48             | 2,6            | 16 | TA211344.1535          | TA511344.1535           | TA611344.1535           |                         |
| 15,50                  | M18                                                                                |                                                                                    | 133            | 83             | 63             | 48             | 2,6            | 16 | TA211344.1550          | TA511344.1550           | TA611344.1550           |                         |
| 15,60                  |                                                                                    | M16x1                                                                              | 133            | 83             | 63             | 48             | 2,6            | 16 | TA211344.1560          | TA511344.1560           | TA611344.1560           |                         |
| 15,80                  | MJ18x2,5                                                                           |                                                                                    | 133            | 83             | 63             | 48             | 2,7            | 16 | TA211344.1580          | TA511344.1580           | TA611344.1580           |                         |
| 15,88                  |                                                                                    |                                                                                    | 133            | 83             | 63             | 48             | 2,7            | 16 | TA211344.1588          | TA511344.1588           | TA611344.1588           |                         |
| 16,00                  | M18x2                                                                              |                                                                                    | 133            | 83             | 63             | 48             | 2,7            | 16 | TA211344.1600          | TA511344.1600           | TA611344.1600           |                         |
| 16,27                  |                                                                                    |                                                                                    | 143            | 93             | 71             | 48             | 2,8            | 18 | TA211344.1627          | TA511344.1627           | TA611344.1627           |                         |
| 16,50                  | M18x1,5 / 3/4-10                                                                   |                                                                                    | 143            | 93             | 71             | 48             | 2,8            | 18 | TA211344.1650          | TA511344.1650           | TA611344.1650           |                         |
| 16,67                  |                                                                                    |                                                                                    | 143            | 93             | 71             | 48             | 2,8            | 18 | TA211344.1667          | TA511344.1667           | TA611344.1667           |                         |
| 17,00                  | M18x1                                                                              |                                                                                    | 143            | 93             | 71             | 48             | 2,9            | 18 | TA211344.1700          | TA511344.1700           | TA611344.1700           |                         |
| 17,46                  |                                                                                    |                                                                                    | 143            | 93             | 71             | 48             | 3,0            | 18 | TA211344.1746          | TA511344.1746           | TA611344.1746           |                         |
| 17,50                  | M20 / 3/4-16                                                                       |                                                                                    | 143            | 93             | 71             | 48             | 3,0            | 18 | TA211344.1750          | TA511344.1750           | TA611344.1750           |                         |
| 18,00                  | M20x2                                                                              |                                                                                    | 143            | 93             | 71             | 48             | 3,1            | 18 | TA211344.1800          | TA511344.1800           | TA611344.1800           |                         |

◀  $\emptyset$  3,00 mm -  $\emptyset$  12,60 mm



## SteelDrill-SD102

3 x D Kurze Ausführung  
Short designVHM  
Carbide

ALTIN

DIN  
6537 K

R30

Z2

4FF

140°

IT9-IT10

DIN 6535

HA

HE

STEEL  
Steel  
materialsBohrtiefe  
Drill depthEinsatzgebiete – Material  
Applications – material

» 14

3 x D

P 1.1-5.1 K 1.1-4.2  
S 1.2-1.3, 2.2-2.3 H 1.1-1.3

| Ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps   | Gewindeformer<br>Cold-forming taps | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | Ø d <sub>2</sub><br>h6 | SteelDrill<br>SD102-3xD<br>HA | SteelDrill<br>SD102-3xD<br>HE |
|------------------------|-------------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------------------|-------------------------------|
| 3,00                   | M3,5x0,5 / MJ3,5x0,6    |                                    | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201544.0300                 | TA501544.0300                 |
| 3,10                   |                         |                                    | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201544.0310                 | TA501544.0310                 |
| 3,15                   | M3,5x0,35               | #6-32                              | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201544.0315                 | TA501544.0315                 |
| 3,18                   |                         |                                    | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201544.0318                 | TA501544.0318                 |
| 3,20                   | MJ3,5x0,35              |                                    | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201544.0320                 | TA501544.0320                 |
| 3,22                   |                         | #6-40                              | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201544.0322                 | TA501544.0322                 |
| 3,25                   |                         | M3,5                               | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201544.0325                 | TA501544.0325                 |
| 3,30                   | M4                      | M3,5x0,5                           | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201544.0330                 | TA501544.0330                 |
| 3,35                   |                         |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201544.0335                 | TA501544.0335                 |
| 3,38                   |                         | M3,5x0,35                          | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201544.0338                 | TA501544.0338                 |
| 3,40                   | MJ4x0,7                 |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201544.0340                 | TA501544.0340                 |
| 3,50                   | M4x0,5 / #8-32 / #8-36  |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201544.0350                 | TA501544.0350                 |
| 3,55                   |                         |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201544.0355                 | TA501544.0355                 |
| 3,57                   |                         |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201544.0357                 | TA501544.0357                 |
| 3,60                   | MJ4x0,5                 |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201544.0360                 | TA501544.0360                 |
| 3,65                   | M4x0,35                 |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201544.0365                 | TA501544.0365                 |
| 3,70                   | M4,5                    | M4                                 | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201544.0370                 | TA501544.0370                 |
| 3,80                   |                         | M4x0,5 / #8-32                     | 66             | 24             | 17             | 36             | 0,6            | 6                      | TA201544.0380                 | TA501544.0380                 |
| 3,85                   |                         | #8-36                              | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201544.0385                 | TA501544.0385                 |
| 3,88                   |                         | M4x0,35                            | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201544.0388                 | TA501544.0388                 |
| 3,90                   | MJ4,5x0,75 / #10-24     |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201544.0390                 | TA501544.0390                 |
| 3,97                   |                         |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201544.0397                 | TA501544.0397                 |
| 4,00                   |                         |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201544.0400                 | TA501544.0400                 |
| 4,04                   |                         |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201544.0404                 | TA501544.0404                 |
| 4,10                   | MJ4,5x0,5 / #10-32      |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201544.0410                 | TA501544.0410                 |
| 4,15                   | M5x0,9                  |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201544.0415                 | TA501544.0415                 |
| 4,20                   | M5 / M5x0,75            | M4,5                               | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201544.0420                 | TA501544.0420                 |
| 4,30                   | MJ5x0,8                 | M4,5x0,5 / #10-24 (GAL)            | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201544.0430                 | TA501544.0430                 |
| 4,35                   |                         | #10-24                             | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201544.0435                 | TA501544.0435                 |
| 4,37                   |                         |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201544.0437                 | TA501544.0437                 |
| 4,40                   |                         |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201544.0440                 | TA501544.0440                 |
| 4,45                   |                         | #10-32                             | 66             | 24             | 17             | 36             | 0,8            | 6                      | TA201544.0445                 | TA501544.0445                 |
| 4,50                   | M5x0,5 / #12-24         |                                    | 66             | 24             | 17             | 36             | 0,8            | 6                      | TA201544.0450                 | TA501544.0450                 |
| 4,60                   | M5,5 / MJ5x0,5 / #12-28 |                                    | 66             | 24             | 17             | 36             | 0,8            | 6                      | TA201544.0460                 | TA501544.0460                 |
| 4,65                   |                         | M5                                 | 66             | 24             | 17             | 36             | 0,8            | 6                      | TA201544.0465                 | TA501544.0465                 |
| 4,70                   |                         | M5x0,75                            | 66             | 24             | 17             | 36             | 0,8            | 6                      | TA201544.0470                 | TA501544.0470                 |
| 4,76                   |                         |                                    | 66             | 28             | 20             | 36             | 0,8            | 6                      | TA201544.0476                 | TA501544.0476                 |
| 4,80                   |                         | M5x0,5                             | 66             | 28             | 20             | 36             | 0,8            | 6                      | TA201544.0480                 | TA501544.0480                 |
| 4,90                   |                         |                                    | 66             | 28             | 20             | 36             | 0,8            | 6                      | TA201544.0490                 | TA501544.0490                 |
| 5,00                   | M6                      | #12-24                             | 66             | 28             | 20             | 36             | 0,8            | 6                      | TA201544.0500                 | TA501544.0500                 |
| 5,10                   | MJ6x1 / 1/4-20          | M5,5 / #12-28                      | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201544.0510                 | TA501544.0510                 |
| 5,11                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201544.0511                 | TA501544.0511                 |
| 5,16                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201544.0516                 | TA501544.0516                 |
| 5,20                   | M6x0,75                 |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201544.0520                 | TA501544.0520                 |
| 5,25                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201544.0525                 | TA501544.0525                 |
| 5,30                   |                         | M5,5x0,5                           | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201544.0530                 | TA501544.0530                 |
| 5,40                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201544.0540                 | TA501544.0540                 |
| 5,41                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201544.0541                 | TA501544.0541                 |
| 5,50                   | M6x0,5 / 1/4-28         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201544.0550                 | TA501544.0550                 |
| 5,55                   |                         | M6 (GAL)                           | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201544.0555                 | TA501544.0555                 |
| 5,56                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201544.0556                 | TA501544.0556                 |
| 5,60                   | MJ6x0,5                 | M6                                 | 66             | 28             | 20             | 36             | 1,0            | 6                      | TA201544.0560                 | TA501544.0560                 |

Ø 5,70 mm - Ø 20,00 mm →

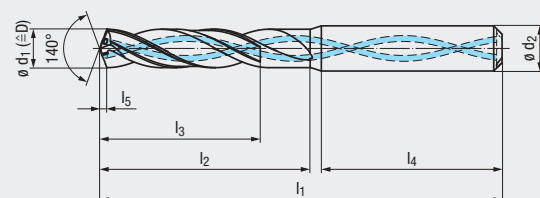


- Product Finder
- $v_c / f$
- BASIC
- STEEL
- INOX
- GG
- HCUT
- SpotDrill
- Zubehör  
Accessories
- 3 x D
- 5 x D
- 6 x D
- 8 x D
- 12 x D
- 2-3,5 x D

### SteelDrill-SD102

## 3 x D

Kurze Ausführung  
Short design



VHM  
Carbide

ALTIN

DIN  
6537 K

R30

Z2

4FF

140°

IT9-IT10

DIN 6535

HA  
HE

STEEL  
Steel  
materials



## 3 x D

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material

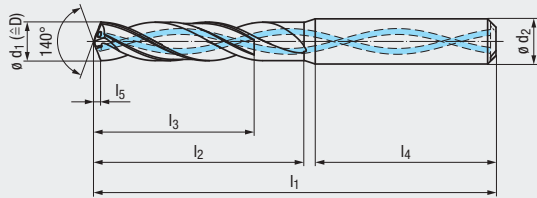
» 14

P 1.1-5.1 K 1.1-4.2  
S 1.2-1.3, 2.2-2.3 H 1.1-1.3

| $\emptyset d_1$<br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps |                |                |                |                |                | $\emptyset d_2$<br>h6 | SteelDrill<br>SD102-3xD | SteelDrill<br>SD102-3xD |
|-----------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|-----------------------|-------------------------|-------------------------|
|                       |                       |                                    | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> |                       | HA                      | HE                      |
| 5,70                  |                       | M6x0,75 / 1/4-20 (GAL)             | 66             | 28             | 20             | 36             | 1,0            | 6                     | TA201544.0570           | TA501544.0570           |
| 5,75                  |                       | 1/4-20                             | 66             | 28             | 20             | 36             | 1,0            | 6                     | TA201544.0575           | TA501544.0575           |
| 5,80                  |                       | M6x0,5                             | 66             | 28             | 20             | 36             | 1,0            | 6                     | TA201544.0580           | TA501544.0580           |
| 5,90                  |                       |                                    | 66             | 28             | 20             | 36             | 1,0            | 6                     | TA201544.0590           | TA501544.0590           |
| 5,95                  |                       | 1/4-28                             | 66             | 28             | 20             | 36             | 1,0            | 6                     | TA201544.0595           | TA501544.0595           |
| 6,00                  | M7                    |                                    | 66             | 28             | 20             | 36             | 1,0            | 6                     | TA201544.0600           | TA501544.0600           |
| 6,10                  | MJ7x1                 |                                    | 79             | 34             | 24             | 36             | 1,0            | 8                     | TA201544.0610           | TA501544.0610           |
| 6,20                  | M7x0,75               |                                    | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201544.0620           | TA501544.0620           |
| 6,30                  |                       |                                    | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201544.0630           | TA501544.0630           |
| 6,35                  | MJ7x0,75              |                                    | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201544.0635           | TA501544.0635           |
| 6,40                  |                       |                                    | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201544.0640           | TA501544.0640           |
| 6,50                  | M7x0,5                |                                    | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201544.0650           | TA501544.0650           |
| 6,53                  |                       |                                    | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201544.0653           | TA501544.0653           |
| 6,60                  | 5/16-18               | M7                                 | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201544.0660           | TA501544.0660           |
| 6,70                  |                       | M7x0,75                            | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201544.0670           | TA501544.0670           |
| 6,75                  |                       |                                    | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201544.0675           | TA501544.0675           |
| 6,80                  | M8 / G1/16            | M7x0,5                             | 79             | 34             | 24             | 36             | 1,2            | 8                     | TA201544.0680           | TA501544.0680           |
| 6,90                  | MJ8x1,25 / 5/16-24    |                                    | 79             | 34             | 24             | 36             | 1,2            | 8                     | TA201544.0690           | TA501544.0690           |
| 7,00                  | M8x1                  |                                    | 79             | 34             | 24             | 36             | 1,2            | 8                     | TA201544.0700           | TA501544.0700           |
| 7,10                  | MJ8x1                 |                                    | 79             | 41             | 29             | 36             | 1,2            | 8                     | TA201544.0710           | TA501544.0710           |
| 7,15                  |                       |                                    | 79             | 41             | 29             | 36             | 1,2            | 8                     | TA201544.0715           | TA501544.0715           |
| 7,20                  | M8x0,75               |                                    | 79             | 41             | 29             | 36             | 1,2            | 8                     | TA201544.0720           | TA501544.0720           |
| 7,25                  |                       | 5/16-18 (GAL) / G1/16              | 79             | 41             | 29             | 36             | 1,2            | 8                     | TA201544.0725           | TA501544.0725           |
| 7,30                  |                       | 5/16-18                            | 79             | 41             | 29             | 36             | 1,2            | 8                     | TA201544.0730           | TA501544.0730           |
| 7,40                  |                       | M8 (GAL) / 5/16-24 (GAL)           | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201544.0740           | TA501544.0740           |
| 7,45                  |                       | M8 / 5/16-24                       | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201544.0745           | TA501544.0745           |
| 7,50                  | M8x0,5                |                                    | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201544.0750           | TA501544.0750           |
| 7,54                  |                       |                                    | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201544.0754           | TA501544.0754           |
| 7,60                  |                       | M8x1                               | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201544.0760           | TA501544.0760           |
| 7,70                  |                       | M8x0,75                            | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201544.0770           | TA501544.0770           |
| 7,80                  | M9                    | M8x0,5                             | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201544.0780           | TA501544.0780           |
| 7,90                  | MJ9x1,25              |                                    | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201544.0790           | TA501544.0790           |
| 7,94                  |                       |                                    | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201544.0794           | TA501544.0794           |
| 8,00                  | M9x1 / 3/8-16         |                                    | 79             | 41             | 29             | 36             | 1,4            | 8                     | TA201544.0800           | TA501544.0800           |
| 8,10                  | MJ9x1                 |                                    | 89             | 47             | 35             | 40             | 1,4            | 10                    | TA201544.0810           | TA501544.0810           |
| 8,20                  | M9x0,75               |                                    | 89             | 47             | 35             | 40             | 1,4            | 10                    | TA201544.0820           | TA501544.0820           |
| 8,30                  |                       |                                    | 89             | 47             | 35             | 40             | 1,4            | 10                    | TA201544.0830           | TA501544.0830           |
| 8,33                  |                       |                                    | 89             | 47             | 35             | 40             | 1,4            | 10                    | TA201544.0833           | TA501544.0833           |
| 8,40                  |                       | M9 (GAL)                           | 89             | 47             | 35             | 40             | 1,4            | 10                    | TA201544.0840           | TA501544.0840           |
| 8,45                  |                       | M9                                 | 89             | 47             | 35             | 40             | 1,4            | 10                    | TA201544.0845           | TA501544.0845           |
| 8,50                  | M10 / M9x0,5 / 3/8-24 |                                    | 89             | 47             | 35             | 40             | 1,4            | 10                    | TA201544.0850           | TA501544.0850           |
| 8,60                  | MJ10x1,5              | M9x1                               | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201544.0860           | TA501544.0860           |
| 8,70                  |                       | M9x0,75                            | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201544.0870           | TA501544.0870           |
| 8,73                  |                       |                                    | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201544.0873           | TA501544.0873           |
| 8,80                  | M10x1,25 / G1/8       | M9x0,5 / 3/8-16                    | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201544.0880           | TA501544.0880           |
| 8,90                  | MJ10x1,25             |                                    | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201544.0890           | TA501544.0890           |
| 9,00                  | M10x1                 | 3/8-24 (GAL)                       | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201544.0900           | TA501544.0900           |
| 9,05                  |                       | 3/8-24                             | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201544.0905           | TA501544.0905           |
| 9,10                  | MJ10x1                |                                    | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201544.0910           | TA501544.0910           |
| 9,13                  |                       |                                    | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201544.0913           | TA501544.0913           |
| 9,20                  | M10x0,75              |                                    | 89             | 47             | 35             | 40             | 1,6            | 10                    | TA201544.0920           | TA501544.0920           |
| 9,30                  |                       | M10 (GAL)                          | 89             | 47             | 35             | 40             | 1,6            | 10                    | TA201544.0930           | TA501544.0930           |



## SteelDrill-SD102

3 x D Kurze Ausführung  
Short designVHM  
Carbide

ALTIN

DIN  
6537 K

R30

Z2

4FF



140°



IT9-IT10

DIN 6535

HA  
HESTEEL  
Steel  
materialsBohrtiefe  
Drill depthEinsatzgebiete – Material  
Applications – material

» 14

3 x D

P 1.1-5.1 K 1.1-4.2  
S 1.2-1.3, 2.2-2.3 H 1.1-1.3

| Ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps |                |                |                |                |                | Ø d <sub>2</sub><br>h6 | SteelDrill<br>SD102-3xD | SteelDrill<br>SD102-3xD |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------------|-------------------------|
|                        |                       |                                    | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> |                        | HA                      | HE                      |
| 9,35                   | MJ10x0,75             | M10                                | 89             | 47             | 35             | 40             | 1,6            | 10                     | TA201544.0935           | TA501544.0935           |
| 9,40                   | 7/16-14               | M10x1,25 (GAL)                     | 89             | 47             | 35             | 40             | 1,6            | 10                     | TA201544.0940           | TA501544.0940           |
| 9,45                   |                       | M10x1,25                           | 89             | 47             | 35             | 40             | 1,6            | 10                     | TA201544.0945           | TA501544.0945           |
| 9,50                   | M11 / M10x0,5         |                                    | 89             | 47             | 35             | 40             | 1,6            | 10                     | TA201544.0950           | TA501544.0950           |
| 9,53                   |                       |                                    | 89             | 47             | 35             | 40             | 1,6            | 10                     | TA201544.0953           | TA501544.0953           |
| 9,60                   | MJ10x0,5 / MJ11x1,5   | M10x1                              | 89             | 47             | 35             | 40             | 1,6            | 10                     | TA201544.0960           | TA501544.0960           |
| 9,70                   |                       | M10x0,75                           | 89             | 47             | 35             | 40             | 1,6            | 10                     | TA201544.0970           | TA501544.0970           |
| 9,80                   |                       | M10x0,5                            | 89             | 47             | 35             | 40             | 1,7            | 10                     | TA201544.0980           | TA501544.0980           |
| 9,90                   | MJ11x1,25 / 7/16-20   |                                    | 89             | 47             | 35             | 40             | 1,7            | 10                     | TA201544.0990           | TA501544.0990           |
| 9,92                   |                       |                                    | 89             | 47             | 35             | 40             | 1,7            | 10                     | TA201544.0992           | TA501544.0992           |
| 10,00                  | M11x1                 |                                    | 89             | 47             | 35             | 40             | 1,7            | 10                     | TA201544.1000           | TA501544.1000           |
| 10,10                  | MJ11x1                |                                    | 102            | 55             | 40             | 45             | 1,7            | 12                     | TA201544.1010           | TA501544.1010           |
| 10,20                  | M12 / M11x0,75        | 7/16-14 (GAL)                      | 102            | 55             | 40             | 45             | 1,7            | 12                     | TA201544.1020           | TA501544.1020           |
| 10,25                  |                       | 7/16-14                            | 102            | 55             | 40             | 45             | 1,7            | 12                     | TA201544.1025           | TA501544.1025           |
| 10,30                  |                       | M11 (GAL)                          | 102            | 55             | 40             | 45             | 1,7            | 12                     | TA201544.1030           | TA501544.1030           |
| 10,32                  |                       |                                    | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201544.1032           | TA501544.1032           |
| 10,35                  | MJ11x0,75             | M11                                | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201544.1035           | TA501544.1035           |
| 10,40                  |                       |                                    | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201544.1040           | TA501544.1040           |
| 10,50                  | M12x1,5               | 7/16-20 (GAL)                      | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201544.1050           | TA501544.1050           |
| 10,55                  |                       | M11x1 (GAL) / 7/16-20              | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201544.1055           | TA501544.1055           |
| 10,60                  | MJ12x1,5              | M11x1                              | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201544.1060           | TA501544.1060           |
| 10,70                  |                       | M11x0,75                           | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201544.1070           | TA501544.1070           |
| 10,72                  |                       |                                    | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201544.1072           | TA501544.1072           |
| 10,80                  | M12x1,25 / 1/2-13     |                                    | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201544.1080           | TA501544.1080           |
| 10,90                  | MJ12x1,25             |                                    | 102            | 55             | 40             | 45             | 1,8            | 12                     | TA201544.1090           | TA501544.1090           |
| 11,00                  | M12x1                 |                                    | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201544.1100           | TA501544.1100           |
| 11,10                  | MJ12x1                |                                    | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201544.1110           | TA501544.1110           |
| 11,11                  |                       |                                    | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201544.1111           | TA501544.1111           |
| 11,20                  | M12x0,75              | M12 (GAL)                          | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201544.1120           | TA501544.1120           |
| 11,25                  |                       | M12                                | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201544.1125           | TA501544.1125           |
| 11,30                  |                       | M12x1,5 (GAL)                      | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201544.1130           | TA501544.1130           |
| 11,35                  |                       | M12x1,5                            | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201544.1135           | TA501544.1135           |
| 11,40                  |                       | M12x1,25 (GAL)                     | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201544.1140           | TA501544.1140           |
| 11,45                  |                       | M12x1,25                           | 102            | 55             | 40             | 45             | 1,9            | 12                     | TA201544.1145           | TA501544.1145           |
| 11,50                  | 1/2-20                |                                    | 102            | 55             | 40             | 45             | 2,0            | 12                     | TA201544.1150           | TA501544.1150           |
| 11,51                  |                       |                                    | 102            | 55             | 40             | 45             | 2,0            | 12                     | TA201544.1151           | TA501544.1151           |
| 11,60                  |                       | M12x1                              | 102            | 55             | 40             | 45             | 2,0            | 12                     | TA201544.1160           | TA501544.1160           |
| 11,70                  |                       | M12x0,75                           | 102            | 55             | 40             | 45             | 2,0            | 12                     | TA201544.1170           | TA501544.1170           |
| 11,80                  | G1/4                  | 1/2-13                             | 102            | 55             | 40             | 45             | 2,0            | 12                     | TA201544.1180           | TA501544.1180           |
| 11,90                  |                       |                                    | 102            | 55             | 40             | 45             | 2,0            | 12                     | TA201544.1190           | TA501544.1190           |
| 11,91                  |                       |                                    | 102            | 55             | 40             | 45             | 2,0            | 12                     | TA201544.1191           | TA501544.1191           |
| 12,00                  | M14                   |                                    | 102            | 55             | 40             | 45             | 2,0            | 12                     | TA201544.1200           | TA501544.1200           |
| 12,10                  | MJ13x1                | 1/2-20 (GAL)                       | 107            | 60             | 43             | 45             | 2,1            | 14                     | TA201544.1210           | TA501544.1210           |
| 12,15                  |                       | 1/2-20                             | 107            | 60             | 43             | 45             | 2,1            | 14                     | TA201544.1215           | TA501544.1215           |
| 12,20                  | 9/16-12               |                                    | 107            | 60             | 43             | 45             | 2,1            | 14                     | TA201544.1220           | TA501544.1220           |
| 12,30                  |                       |                                    | 107            | 60             | 43             | 45             | 2,1            | 14                     | TA201544.1230           | TA501544.1230           |
| 12,50                  | M14x1,5               | G1/4 (GAL)                         | 107            | 60             | 43             | 45             | 2,1            | 14                     | TA201544.1250           | TA501544.1250           |
| 12,55                  |                       | M13x1 (GAL) / G1/4                 | 107            | 60             | 43             | 45             | 2,1            | 14                     | TA201544.1255           | TA501544.1255           |
| 12,60                  | MJ14x1,5              | M13x1                              | 107            | 60             | 43             | 45             | 2,1            | 14                     | TA201544.1260           | TA501544.1260           |
| 12,70                  |                       | M13x0,75                           | 107            | 60             | 43             | 45             | 2,2            | 14                     | TA201544.1270           | TA501544.1270           |
| 12,80                  | M14x1,25              |                                    | 107            | 60             | 43             | 45             | 2,2            | 14                     | TA201544.1280           | TA501544.1280           |
| 12,90                  | MJ14x1,25 / 9/16-18   |                                    | 107            | 60             | 43             | 45             | 2,2            | 14                     | TA201544.1290           | TA501544.1290           |

Ø 13,00 mm - Ø 20,00 mm →



Product  
Finder

$v_c / f$

BASIC

STEEL

INOX

GG

HCUT

SpotDrill

Zubehör  
Accessories

3 x D

5 x D

6 x D

8 x D

12 x D

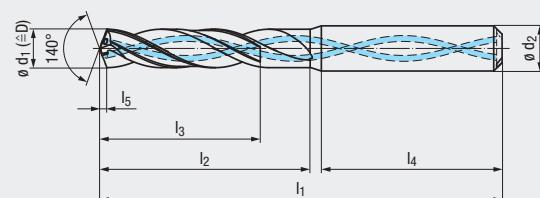
2-3,5 x D



### SteelDrill-SD102

## 3 x D

Kurze Ausführung  
Short design



VHM  
Carbide

ALTIN

DIN  
6537 K

R30



DIN 6535



STEEL  
Steel  
materials



## 3 x D

P 1.1-5.1  
S 1.2-1.3, 2.2-2.3

K 1.1-4.2  
H 1.1-1.3

Einsatzgebiete – Material  
Applications – material

» 14

| $\emptyset d_1$<br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps |       |       |       |       |       | $\emptyset d_2$<br>h6 | SteelDrill<br>SD102-3xD | SteelDrill<br>SD102-3xD |
|-----------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-----------------------|-------------------------|-------------------------|
|                       |                       |                                    | $l_1$ | $l_2$ | $l_3$ | $l_4$ | $l_5$ |                       | HA                      | HE                      |
| 13,00                 | M14x1                 |                                    | 107   | 60    | 43    | 45    | 2,2   | 14                    | TA201544.1300           | TA501544.1300           |
| 13,10                 | MJ14x1                | M14                                | 107   | 60    | 43    | 45    | 2,2   | 14                    | TA201544.1310           | TA501544.1310           |
| 13,20                 | M14x0,75              |                                    | 107   | 60    | 43    | 45    | 2,2   | 14                    | TA201544.1320           | TA501544.1320           |
| 13,30                 |                       | 9/16-12                            | 107   | 60    | 43    | 45    | 2,3   | 14                    | TA201544.1330           | TA501544.1330           |
| 13,35                 |                       | M14x1,5                            | 107   | 60    | 43    | 45    | 2,3   | 14                    | TA201544.1335           | TA501544.1335           |
| 13,45                 |                       | M14x1,25                           | 107   | 60    | 43    | 45    | 2,3   | 14                    | TA201544.1345           | TA501544.1345           |
| 13,49                 |                       |                                    | 107   | 60    | 43    | 45    | 2,3   | 14                    | TA201544.1349           | TA501544.1349           |
| 13,50                 | 5/8-11                |                                    | 107   | 60    | 43    | 45    | 2,3   | 14                    | TA201544.1350           | TA501544.1350           |
| 13,60                 | MJ15x1,5              | M14x1 / 9/16-18 (GAL)              | 107   | 60    | 43    | 45    | 2,3   | 14                    | TA201544.1360           | TA501544.1360           |
| 13,65                 |                       | 9/16-18                            | 107   | 60    | 43    | 45    | 2,3   | 14                    | TA201544.1365           | TA501544.1365           |
| 13,70                 |                       | M14x0,75                           | 107   | 60    | 43    | 45    | 2,3   | 14                    | TA201544.1370           | TA501544.1370           |
| 13,80                 |                       |                                    | 107   | 60    | 43    | 45    | 2,3   | 14                    | TA201544.1380           | TA501544.1380           |
| 13,89                 |                       |                                    | 107   | 60    | 43    | 45    | 2,4   | 14                    | TA201544.1389           | TA501544.1389           |
| 14,00                 | M16 / M15x1           |                                    | 107   | 60    | 43    | 45    | 2,4   | 14                    | TA201544.1400           | TA501544.1400           |
| 14,10                 | MJ15x1                |                                    | 115   | 65    | 45    | 48    | 2,4   | 16                    | TA201544.1410           | TA501544.1410           |
| 14,20                 | M15x0,75              |                                    | 115   | 65    | 45    | 48    | 2,4   | 16                    | TA201544.1420           | TA501544.1420           |
| 14,29                 |                       |                                    | 115   | 65    | 45    | 48    | 2,4   | 16                    | TA201544.1429           | TA501544.1429           |
| 14,30                 |                       |                                    | 115   | 65    | 45    | 48    | 2,4   | 16                    | TA201544.1430           | TA501544.1430           |
| 14,40                 |                       |                                    | 115   | 65    | 45    | 48    | 2,4   | 16                    | TA201544.1440           | TA501544.1440           |
| 14,50                 | M16x1,5 / 5/8-18      |                                    | 115   | 65    | 45    | 48    | 2,5   | 16                    | TA201544.1450           | TA501544.1450           |
| 14,60                 | MJ16x1,5              | M15x1                              | 115   | 65    | 45    | 48    | 2,5   | 16                    | TA201544.1460           | TA501544.1460           |
| 14,68                 |                       |                                    | 115   | 65    | 45    | 48    | 2,5   | 16                    | TA201544.1468           | TA501544.1468           |
| 14,70                 |                       | M15x0,75                           | 115   | 65    | 45    | 48    | 2,5   | 16                    | TA201544.1470           | TA501544.1470           |
| 14,80                 |                       | 5/8-11                             | 115   | 65    | 45    | 48    | 2,5   | 16                    | TA201544.1480           | TA501544.1480           |
| 15,00                 | M16x1                 |                                    | 115   | 65    | 45    | 48    | 2,5   | 16                    | TA201544.1500           | TA501544.1500           |
| 15,08                 |                       |                                    | 115   | 65    | 45    | 48    | 2,6   | 16                    | TA201544.1508           | TA501544.1508           |
| 15,10                 | MJ16x1                | M16                                | 115   | 65    | 45    | 48    | 2,6   | 16                    | TA201544.1510           | TA501544.1510           |
| 15,20                 | M16x0,75              | 5/8-18 (GAL)                       | 115   | 65    | 45    | 48    | 2,6   | 16                    | TA201544.1520           | TA501544.1520           |
| 15,25                 | G3/8                  | 5/8-18                             | 115   | 65    | 45    | 48    | 2,6   | 16                    | TA201544.1525           | TA501544.1525           |
| 15,35                 |                       | M16x1,5                            | 115   | 65    | 45    | 48    | 2,6   | 16                    | TA201544.1535           | TA501544.1535           |
| 15,50                 | M18                   |                                    | 115   | 65    | 45    | 48    | 2,6   | 16                    | TA201544.1550           | TA501544.1550           |
| 15,60                 |                       | M16x1                              | 115   | 65    | 45    | 48    | 2,6   | 16                    | TA201544.1560           | TA501544.1560           |
| 15,80                 | MJ18x2,5              |                                    | 115   | 65    | 45    | 48    | 2,7   | 16                    | TA201544.1580           | TA501544.1580           |
| 15,88                 |                       |                                    | 115   | 65    | 45    | 48    | 2,7   | 16                    | TA201544.1588           | TA501544.1588           |
| 16,00                 | M18x2                 |                                    | 115   | 65    | 45    | 48    | 2,7   | 16                    | TA201544.1600           | TA501544.1600           |
| 16,27                 |                       |                                    | 123   | 73    | 51    | 48    | 2,8   | 18                    | TA201544.1627           | TA501544.1627           |
| 16,50                 | M18x1,5 / 3/4-10      |                                    | 123   | 73    | 51    | 48    | 2,8   | 18                    | TA201544.1650           | TA501544.1650           |
| 16,67                 |                       |                                    | 123   | 73    | 51    | 48    | 2,8   | 18                    | TA201544.1667           | TA501544.1667           |
| 17,00                 | M18x1                 |                                    | 123   | 73    | 51    | 48    | 2,9   | 18                    | TA201544.1700           | TA501544.1700           |
| 17,46                 |                       |                                    | 123   | 73    | 51    | 48    | 3,0   | 18                    | TA201544.1746           | TA501544.1746           |
| 17,50                 | M20 / 3/4-16          |                                    | 123   | 73    | 51    | 48    | 3,0   | 18                    | TA201544.1750           | TA501544.1750           |
| 17,60                 |                       | M18x1                              | 123   | 73    | 51    | 48    | 3,0   | 18                    | TA201544.1760           | TA501544.1760           |
| 18,00                 | M20x2                 |                                    | 123   | 73    | 51    | 48    | 3,1   | 18                    | TA201544.1800           | TA501544.1800           |
| 18,50                 | M20x1,5               |                                    | 131   | 79    | 55    | 50    | 3,1   | 20                    | TA201544.1850           | TA501544.1850           |
| 18,85                 |                       | M20                                | 131   | 79    | 55    | 50    | 3,2   | 20                    | TA201544.1885           | TA501544.1885           |
| 19,00                 | M20x1 / G1/2          |                                    | 131   | 79    | 55    | 50    | 3,2   | 20                    | TA201544.1900           | TA501544.1900           |
| 19,05                 |                       |                                    | 131   | 79    | 55    | 50    | 3,2   | 20                    | TA201544.1905           | TA501544.1905           |
| 19,35                 |                       | M20x1,5                            | 131   | 79    | 55    | 50    | 3,3   | 20                    | TA201544.1935           | TA501544.1935           |
| 19,50                 | M22 / 7/8-9           |                                    | 131   | 79    | 55    | 50    | 3,3   | 20                    | TA201544.1950           | TA501544.1950           |
| 19,60                 |                       | M20x1                              | 131   | 79    | 55    | 50    | 3,3   | 20                    | TA201544.1960           | TA501544.1960           |
| 20,00                 | M22x2                 |                                    | 131   | 79    | 55    | 50    | 3,4   | 20                    | TA201544.2000           | TA501544.2000           |

## SteelDrill-SD102

VHM  
Carbide

ALTIN

DIN  
6537 L

R30

Z2

4FF

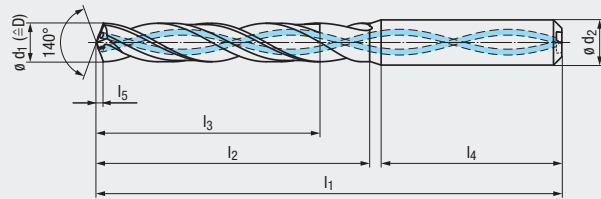


140°



IT9-IT10

DIN 6535

STEEL  
Steel  
materials
**5 x D** Lange Ausführung  
Long design
Bohrtiefe  
Drill depthEinsatzgebiete – Material  
Applications – material

» 14

5 x D

**P** 1.1-5.1 **K** 1.1-4.2  
**S** 1.2-1.3, 2.2-2.3 **H** 1.1-1.3

| Ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps                                                              | Gewindeformer<br>Cold-forming taps                                                 |                |                |                |                |                |    | Ø d <sub>2</sub><br>h6 | SteelDrill<br>SD102-5xD | SteelDrill<br>SD102-5xD |
|------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----|------------------------|-------------------------|-------------------------|
|                        |  |  | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | HA |                        | HE                      |                         |
| 3,00                   | M3,5x0,5 / MJ3,5x0,6                                                               |                                                                                    | 66             | 28             | 23             | 36             | 0,5            | 6  | TA211544.0300          | TA511544.0300           |                         |
| 3,10                   |                                                                                    |                                                                                    | 66             | 28             | 23             | 36             | 0,5            | 6  | TA211544.0310          | TA511544.0310           |                         |
| 3,15                   | M3,5x0,35                                                                          | #6-32                                                                              | 66             | 28             | 23             | 36             | 0,5            | 6  | TA211544.0315          | TA511544.0315           |                         |
| 3,18                   |                                                                                    |                                                                                    | 66             | 28             | 23             | 36             | 0,5            | 6  | TA211544.0318          | TA511544.0318           |                         |
| 3,20                   | MJ3,5x0,35                                                                         |                                                                                    | 66             | 28             | 23             | 36             | 0,5            | 6  | TA211544.0320          | TA511544.0320           |                         |
| 3,22                   |                                                                                    | #6-40                                                                              | 66             | 28             | 23             | 36             | 0,5            | 6  | TA211544.0322          | TA511544.0322           |                         |
| 3,25                   |                                                                                    | M3,5                                                                               | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211544.0325          | TA511544.0325           |                         |
| 3,30                   | M4                                                                                 | M3,5x0,5                                                                           | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211544.0330          | TA511544.0330           |                         |
| 3,35                   |                                                                                    |                                                                                    | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211544.0335          | TA511544.0335           |                         |
| 3,38                   |                                                                                    | M3,5x0,35                                                                          | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211544.0338          | TA511544.0338           |                         |
| 3,40                   | MJ4x0,7                                                                            |                                                                                    | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211544.0340          | TA511544.0340           |                         |
| 3,50                   | M4x0,5 / #8-32 / #8-36                                                             |                                                                                    | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211544.0350          | TA511544.0350           |                         |
| 3,55                   |                                                                                    |                                                                                    | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211544.0355          | TA511544.0355           |                         |
| 3,57                   |                                                                                    |                                                                                    | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211544.0357          | TA511544.0357           |                         |
| 3,60                   | MJ4x0,5                                                                            |                                                                                    | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211544.0360          | TA511544.0360           |                         |
| 3,65                   | M4x0,35                                                                            |                                                                                    | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211544.0365          | TA511544.0365           |                         |
| 3,70                   | M4,5                                                                               | M4                                                                                 | 66             | 28             | 23             | 36             | 0,6            | 6  | TA211544.0370          | TA511544.0370           |                         |
| 3,80                   |                                                                                    | M4x0,5 / #8-32                                                                     | 74             | 36             | 29             | 36             | 0,6            | 6  | TA211544.0380          | TA511544.0380           |                         |
| 3,85                   |                                                                                    | #8-36                                                                              | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211544.0385          | TA511544.0385           |                         |
| 3,88                   |                                                                                    | M4x0,35                                                                            | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211544.0388          | TA511544.0388           |                         |
| 3,90                   | MJ4,5x0,75 / #10-24                                                                |                                                                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211544.0390          | TA511544.0390           |                         |
| 3,97                   |                                                                                    |                                                                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211544.0397          | TA511544.0397           |                         |
| 4,00                   |                                                                                    |                                                                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211544.0400          | TA511544.0400           |                         |
| 4,04                   |                                                                                    |                                                                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211544.0404          | TA511544.0404           |                         |
| 4,10                   | MJ4,5x0,5 / #10-32                                                                 |                                                                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211544.0410          | TA511544.0410           |                         |
| 4,15                   | M5x0,9                                                                             |                                                                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211544.0415          | TA511544.0415           |                         |
| 4,20                   | M5 / M5x0,75                                                                       | M4,5                                                                               | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211544.0420          | TA511544.0420           |                         |
| 4,30                   | MJ5x0,8                                                                            | M4,5x0,5 / #10-24 (GAL)                                                            | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211544.0430          | TA511544.0430           |                         |
| 4,35                   |                                                                                    | #10-24                                                                             | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211544.0435          | TA511544.0435           |                         |
| 4,37                   |                                                                                    |                                                                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211544.0437          | TA511544.0437           |                         |
| 4,40                   |                                                                                    |                                                                                    | 74             | 36             | 29             | 36             | 0,7            | 6  | TA211544.0440          | TA511544.0440           |                         |
| 4,45                   |                                                                                    | #10-32                                                                             | 74             | 36             | 29             | 36             | 0,8            | 6  | TA211544.0445          | TA511544.0445           |                         |
| 4,50                   | M5x0,5 / #12-24                                                                    |                                                                                    | 74             | 36             | 29             | 36             | 0,8            | 6  | TA211544.0450          | TA511544.0450           |                         |
| 4,60                   | M5,5 / MJ5x0,5 / #12-28                                                            |                                                                                    | 74             | 36             | 29             | 36             | 0,8            | 6  | TA211544.0460          | TA511544.0460           |                         |
| 4,65                   |                                                                                    | M5                                                                                 | 74             | 36             | 29             | 36             | 0,8            | 6  | TA211544.0465          | TA511544.0465           |                         |
| 4,70                   |                                                                                    | M5x0,75                                                                            | 74             | 36             | 29             | 36             | 0,8            | 6  | TA211544.0470          | TA511544.0470           |                         |
| 4,76                   |                                                                                    |                                                                                    | 82             | 44             | 35             | 36             | 0,8            | 6  | TA211544.0476          | TA511544.0476           |                         |
| 4,80                   |                                                                                    | M5x0,5                                                                             | 82             | 44             | 35             | 36             | 0,8            | 6  | TA211544.0480          | TA511544.0480           |                         |
| 4,90                   |                                                                                    |                                                                                    | 82             | 44             | 35             | 36             | 0,8            | 6  | TA211544.0490          | TA511544.0490           |                         |
| 5,00                   | M6                                                                                 | #12-24                                                                             | 82             | 44             | 35             | 36             | 0,8            | 6  | TA211544.0500          | TA511544.0500           |                         |
| 5,10                   | MJ6x1 / 1/4-20                                                                     | M5,5 / #12-28                                                                      | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211544.0510          | TA511544.0510           |                         |
| 5,11                   |                                                                                    |                                                                                    | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211544.0511          | TA511544.0511           |                         |
| 5,16                   |                                                                                    |                                                                                    | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211544.0516          | TA511544.0516           |                         |
| 5,20                   | M6x0,75                                                                            |                                                                                    | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211544.0520          | TA511544.0520           |                         |
| 5,25                   |                                                                                    |                                                                                    | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211544.0525          | TA511544.0525           |                         |
| 5,30                   |                                                                                    | M5,5x0,5                                                                           | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211544.0530          | TA511544.0530           |                         |
| 5,40                   |                                                                                    |                                                                                    | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211544.0540          | TA511544.0540           |                         |
| 5,41                   |                                                                                    |                                                                                    | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211544.0541          | TA511544.0541           |                         |
| 5,50                   | M6x0,5 / 1/4-28                                                                    |                                                                                    | 82             | 44             | 35             | 36             | 0,9            | 6  | TA211544.0550          | TA511544.0550           |                         |

ø 5,55 mm - ø 20,00 mm →



Product  
Finder

$v_c / f$

BASIC

STEEL

INOX

GG

HCUT

SpotDrill

Zubehör  
Accessories

3 x D

5 x D

6 x D

8 x D

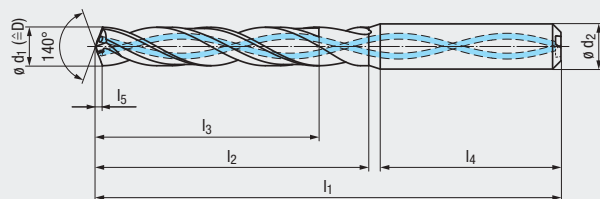
12 x D

2-3,5 x D



### SteelDrill-SD102

**5 x D** Lange Ausführung  
Long design



VHM  
Carbide

ALTIN

DIN  
6537 L

R30



DIN 6535



STEEL  
Steel  
materials



**5 x D**

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material

» 14

P 1.1-5.1 K 1.1-4.2  
S 1.2-1.3, 2.2-2.3 H 1.1-1.3

| $\emptyset d_1$<br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps |       |       |       |       |       | $\emptyset d_2$<br>h6 | SteelDrill<br>SD102-5xD | SteelDrill<br>SD102-5xD |
|-----------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-----------------------|-------------------------|-------------------------|
|                       |                       |                                    | $l_1$ | $l_2$ | $l_3$ | $l_4$ | $l_5$ |                       | HA                      | HE                      |
| 5,55                  |                       | M6 (GAL)                           | 82    | 44    | 35    | 36    | 0,9   | 6                     | TA211544.0555           | TA511544.0555           |
| 5,56                  |                       |                                    | 82    | 44    | 35    | 36    | 0,9   | 6                     | TA211544.0556           | TA511544.0556           |
| 5,60                  | MJ6x0,5               | M6                                 | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211544.0560           | TA511544.0560           |
| 5,70                  |                       | M6x0,75 / 1/4-20 (GAL)             | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211544.0570           | TA511544.0570           |
| 5,75                  |                       | 1/4-20                             | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211544.0575           | TA511544.0575           |
| 5,80                  |                       | M6x0,5                             | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211544.0580           | TA511544.0580           |
| 5,90                  |                       |                                    | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211544.0590           | TA511544.0590           |
| 5,95                  |                       | 1/4-28                             | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211544.0595           | TA511544.0595           |
| 6,00                  | M7                    |                                    | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211544.0600           | TA511544.0600           |
| 6,10                  | MJ7x1                 |                                    | 91    | 53    | 43    | 36    | 1,0   | 8                     | TA211544.0610           | TA511544.0610           |
| 6,20                  | M7x0,75               |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211544.0620           | TA511544.0620           |
| 6,30                  |                       |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211544.0630           | TA511544.0630           |
| 6,35                  | MJ7x0,75              |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211544.0635           | TA511544.0635           |
| 6,40                  |                       |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211544.0640           | TA511544.0640           |
| 6,50                  | M7x0,5                |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211544.0650           | TA511544.0650           |
| 6,53                  |                       |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211544.0653           | TA511544.0653           |
| 6,60                  | 5/16-18               | M7                                 | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211544.0660           | TA511544.0660           |
| 6,70                  |                       | M7x0,75                            | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211544.0670           | TA511544.0670           |
| 6,75                  |                       |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211544.0675           | TA511544.0675           |
| 6,80                  | M8 / G1/16            | M7x0,5                             | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211544.0680           | TA511544.0680           |
| 6,90                  | MJ8x1,25 / 5/16-24    |                                    | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211544.0690           | TA511544.0690           |
| 7,00                  | M8x1                  |                                    | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211544.0700           | TA511544.0700           |
| 7,10                  | MJ8x1                 |                                    | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211544.0710           | TA511544.0710           |
| 7,15                  |                       |                                    | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211544.0715           | TA511544.0715           |
| 7,20                  | M8x0,75               |                                    | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211544.0720           | TA511544.0720           |
| 7,25                  |                       | 5/16-18 (GAL) / G1/16              | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211544.0725           | TA511544.0725           |
| 7,30                  |                       | 5/16-18                            | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211544.0730           | TA511544.0730           |
| 7,40                  |                       | M8 (GAL) / 5/16-24 (GAL)           | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211544.0740           | TA511544.0740           |
| 7,45                  |                       | M8 / 5/16-24                       | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211544.0745           | TA511544.0745           |
| 7,50                  | M8x0,5                |                                    | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211544.0750           | TA511544.0750           |
| 7,54                  |                       |                                    | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211544.0754           | TA511544.0754           |
| 7,60                  |                       | M8x1                               | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211544.0760           | TA511544.0760           |
| 7,70                  |                       | M8x0,75                            | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211544.0770           | TA511544.0770           |
| 7,80                  | M9                    | M8x0,5                             | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211544.0780           | TA511544.0780           |
| 7,90                  | MJ9x1,25              |                                    | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211544.0790           | TA511544.0790           |
| 7,94                  |                       |                                    | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211544.0794           | TA511544.0794           |
| 8,00                  | M9x1 / 3/8-16         |                                    | 91    | 53    | 43    | 36    | 1,4   | 8                     | TA211544.0800           | TA511544.0800           |
| 8,10                  | MJ9x1                 |                                    | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211544.0810           | TA511544.0810           |
| 8,20                  | M9x0,75               |                                    | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211544.0820           | TA511544.0820           |
| 8,30                  |                       |                                    | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211544.0830           | TA511544.0830           |
| 8,33                  |                       |                                    | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211544.0833           | TA511544.0833           |
| 8,40                  |                       | M9 (GAL)                           | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211544.0840           | TA511544.0840           |
| 8,45                  |                       | M9                                 | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211544.0845           | TA511544.0845           |
| 8,50                  | M10 / M9x0,5 / 3/8-24 |                                    | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211544.0850           | TA511544.0850           |
| 8,60                  | MJ10x1,5              | M9x1                               | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211544.0860           | TA511544.0860           |
| 8,70                  |                       | M9x0,75                            | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211544.0870           | TA511544.0870           |
| 8,73                  |                       |                                    | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211544.0873           | TA511544.0873           |
| 8,80                  | M10x1,25 / G1/8       | M9x0,5 / 3/8-16                    | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211544.0880           | TA511544.0880           |
| 8,90                  | MJ10x1,25             |                                    | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211544.0890           | TA511544.0890           |



## SteelDrill-SD102

VHM  
Carbide

ALTIN

DIN  
6537 L

R30

Z2

4FF

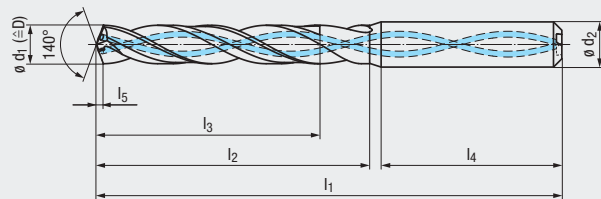


140°



IT9-IT10

DIN 6535

STEEL  
Steel  
materials**5 x D** Lange Ausführung  
Long designBohrtiefe  
Drill depthEinsatzgebiete – Material  
Applications – material

» 14

**5 x D**

**P** 1.1-5.1 **K** 1.1-4.2  
**S** 1.2-1.3, 2.2-2.3 **H** 1.1-1.3

| ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps |                |                |                |                |                |    | ø d <sub>2</sub><br>h6 | SteelDrill<br>SD102-5xD | SteelDrill<br>SD102-5xD |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|----|------------------------|-------------------------|-------------------------|
|                        |                       |                                    | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> |    |                        | HA                      | HE                      |
| 9,00                   | M10x1                 | 3/8-24 (GAL)                       | 103            | 61             | 49             | 40             | 1,5            | 10 |                        | TA211544.0900           | TA511544.0900           |
| 9,05                   |                       | 3/8-24                             | 103            | 61             | 49             | 40             | 1,5            | 10 |                        | TA211544.0905           | TA511544.0905           |
| 9,10                   | MJ10x1                |                                    | 103            | 61             | 49             | 40             | 1,5            | 10 |                        | TA211544.0910           | TA511544.0910           |
| 9,13                   |                       |                                    | 103            | 61             | 49             | 40             | 1,5            | 10 |                        | TA211544.0913           | TA511544.0913           |
| 9,20                   | M10x0,75              |                                    | 103            | 61             | 49             | 40             | 1,6            | 10 |                        | TA211544.0920           | TA511544.0920           |
| 9,30                   |                       | M10 (GAL)                          | 103            | 61             | 49             | 40             | 1,6            | 10 |                        | TA211544.0930           | TA511544.0930           |
| 9,35                   | MJ10x0,75             | M10                                | 103            | 61             | 49             | 40             | 1,6            | 10 |                        | TA211544.0935           | TA511544.0935           |
| 9,40                   | 7/16-14               | M10x1,25 (GAL)                     | 103            | 61             | 49             | 40             | 1,6            | 10 |                        | TA211544.0940           | TA511544.0940           |
| 9,45                   |                       | M10x1,25                           | 103            | 61             | 49             | 40             | 1,6            | 10 |                        | TA211544.0945           | TA511544.0945           |
| 9,50                   | M11 / M10x0,5         |                                    | 103            | 61             | 49             | 40             | 1,6            | 10 |                        | TA211544.0950           | TA511544.0950           |
| 9,53                   |                       |                                    | 103            | 61             | 49             | 40             | 1,6            | 10 |                        | TA211544.0953           | TA511544.0953           |
| 9,60                   | MJ10x0,5 / MJ11x1,5   | M10x1                              | 103            | 61             | 49             | 40             | 1,6            | 10 |                        | TA211544.0960           | TA511544.0960           |
| 9,70                   |                       | M10x0,75                           | 103            | 61             | 49             | 40             | 1,6            | 10 |                        | TA211544.0970           | TA511544.0970           |
| 9,80                   |                       | M10x0,5                            | 103            | 61             | 49             | 40             | 1,7            | 10 |                        | TA211544.0980           | TA511544.0980           |
| 9,90                   | MJ11x1,25 / 7/16-20   |                                    | 103            | 61             | 49             | 40             | 1,7            | 10 |                        | TA211544.0990           | TA511544.0990           |
| 9,92                   |                       |                                    | 103            | 61             | 49             | 40             | 1,7            | 10 |                        | TA211544.0992           | TA511544.0992           |
| 10,00                  | M11x1                 |                                    | 103            | 61             | 49             | 40             | 1,7            | 10 |                        | TA211544.1000           | TA511544.1000           |
| 10,10                  | MJ11x1                |                                    | 118            | 71             | 56             | 45             | 1,7            | 12 |                        | TA211544.1010           | TA511544.1010           |
| 10,20                  | M12 / M11x0,75        | 7/16-14 (GAL)                      | 118            | 71             | 56             | 45             | 1,7            | 12 |                        | TA211544.1020           | TA511544.1020           |
| 10,25                  |                       | 7/16-14                            | 118            | 71             | 56             | 45             | 1,7            | 12 |                        | TA211544.1025           | TA511544.1025           |
| 10,30                  |                       | M11 (GAL)                          | 118            | 71             | 56             | 45             | 1,7            | 12 |                        | TA211544.1030           | TA511544.1030           |
| 10,32                  |                       |                                    | 118            | 71             | 56             | 45             | 1,8            | 12 |                        | TA211544.1032           | TA511544.1032           |
| 10,35                  | MJ11x0,75             | M11                                | 118            | 71             | 56             | 45             | 1,8            | 12 |                        | TA211544.1035           | TA511544.1035           |
| 10,40                  |                       |                                    | 118            | 71             | 56             | 45             | 1,8            | 12 |                        | TA211544.1040           | TA511544.1040           |
| 10,50                  | M12x1,5               | 7/16-20 (GAL)                      | 118            | 71             | 56             | 45             | 1,8            | 12 |                        | TA211544.1050           | TA511544.1050           |
| 10,55                  |                       | M11x1 (GAL) / 7/16-20              | 118            | 71             | 56             | 45             | 1,8            | 12 |                        | TA211544.1055           | TA511544.1055           |
| 10,60                  | MJ12x1,5              | M11x1                              | 118            | 71             | 56             | 45             | 1,8            | 12 |                        | TA211544.1060           | TA511544.1060           |
| 10,70                  |                       | M11x0,75                           | 118            | 71             | 56             | 45             | 1,8            | 12 |                        | TA211544.1070           | TA511544.1070           |
| 10,72                  |                       |                                    | 118            | 71             | 56             | 45             | 1,8            | 12 |                        | TA211544.1072           | TA511544.1072           |
| 10,80                  | M12x1,25 / 1/2-13     |                                    | 118            | 71             | 56             | 45             | 1,8            | 12 |                        | TA211544.1080           | TA511544.1080           |
| 10,90                  | MJ12x1,25             |                                    | 118            | 71             | 56             | 45             | 1,8            | 12 |                        | TA211544.1090           | TA511544.1090           |
| 11,00                  | M12x1                 |                                    | 118            | 71             | 56             | 45             | 1,9            | 12 |                        | TA211544.1100           | TA511544.1100           |
| 11,10                  | MJ12x1                |                                    | 118            | 71             | 56             | 45             | 1,9            | 12 |                        | TA211544.1110           | TA511544.1110           |
| 11,11                  |                       |                                    | 118            | 71             | 56             | 45             | 1,9            | 12 |                        | TA211544.1111           | TA511544.1111           |
| 11,20                  | M12x0,75              | M12 (GAL)                          | 118            | 71             | 56             | 45             | 1,9            | 12 |                        | TA211544.1120           | TA511544.1120           |
| 11,25                  |                       | M12                                | 118            | 71             | 56             | 45             | 1,9            | 12 |                        | TA211544.1125           | TA511544.1125           |
| 11,30                  |                       | M12x1,5 (GAL)                      | 118            | 71             | 56             | 45             | 1,9            | 12 |                        | TA211544.1130           | TA511544.1130           |
| 11,35                  |                       | M12x1,5                            | 118            | 71             | 56             | 45             | 1,9            | 12 |                        | TA211544.1135           | TA511544.1135           |
| 11,40                  |                       | M12x1,25 (GAL)                     | 118            | 71             | 56             | 45             | 1,9            | 12 |                        | TA211544.1140           | TA511544.1140           |
| 11,45                  |                       | M12x1,25                           | 118            | 71             | 56             | 45             | 1,9            | 12 |                        | TA211544.1145           | TA511544.1145           |
| 11,50                  | 1/2-20                |                                    | 118            | 71             | 56             | 45             | 2,0            | 12 |                        | TA211544.1150           | TA511544.1150           |
| 11,51                  |                       |                                    | 118            | 71             | 56             | 45             | 2,0            | 12 |                        | TA211544.1151           | TA511544.1151           |
| 11,60                  |                       | M12x1                              | 118            | 71             | 56             | 45             | 2,0            | 12 |                        | TA211544.1160           | TA511544.1160           |
| 11,70                  |                       | M12x0,75                           | 118            | 71             | 56             | 45             | 2,0            | 12 |                        | TA211544.1170           | TA511544.1170           |
| 11,80                  | G1/4                  | 1/2-13                             | 118            | 71             | 56             | 45             | 2,0            | 12 |                        | TA211544.1180           | TA511544.1180           |
| 11,90                  |                       |                                    | 118            | 71             | 56             | 45             | 2,0            | 12 |                        | TA211544.1190           | TA511544.1190           |
| 11,91                  |                       |                                    | 118            | 71             | 56             | 45             | 2,0            | 12 |                        | TA211544.1191           | TA511544.1191           |
| 12,00                  | M14                   |                                    | 118            | 71             | 56             | 45             | 2,0            | 12 |                        | TA211544.1200           | TA511544.1200           |
| 12,10                  | MJ13x1                | 1/2-20 (GAL)                       | 124            | 77             | 60             | 45             | 2,1            | 14 |                        | TA211544.1210           | TA511544.1210           |

ø 12,15 mm - ø 20,00 mm →



Product  
Finder

$v_c / f$

BASIC

STEEL

INOX

GG

HCUT

SpotDrill

Zubehör  
Accessories

3 x D

5 x D

6 x D

8 x D

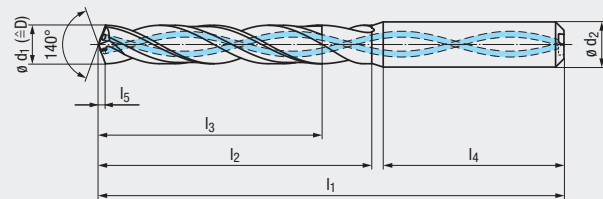
12 x D

2-3,5 x D



### SteelDrill-SD102

**5 x D** Lange Ausführung  
Long design



VHM  
Carbide

ALTIN

DIN  
6537 L

R30



DIN 6535



STEEL  
Steel  
materials



**5 x D**

P 1.1-5.1 K 1.1-4.2  
S 1.2-1.3, 2.2-2.3 H 1.1-1.3

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material

» 14

| Ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps                                                              | Gewindeformer<br>Cold-forming taps                                                 |                |                |                |                |                |    | Ø d <sub>2</sub><br>h6 | SteelDrill<br>SD102-5xD | SteelDrill<br>SD102-5xD |
|------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----|------------------------|-------------------------|-------------------------|
|                        |  |  | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | HA |                        | HE                      |                         |
| 12,15                  |                                                                                    | 1/2-20                                                                             | 124            | 77             | 60             | 45             | 2,1            | 14 | TA211544.1215          | TA511544.1215           |                         |
| 12,20                  | 9/16-12                                                                            |                                                                                    | 124            | 77             | 60             | 45             | 2,1            | 14 | TA211544.1220          | TA511544.1220           |                         |
| 12,30                  |                                                                                    |                                                                                    | 124            | 77             | 60             | 45             | 2,1            | 14 | TA211544.1230          | TA511544.1230           |                         |
| 12,50                  | M14x1,5                                                                            | G1/4 (GAL)                                                                         | 124            | 77             | 60             | 45             | 2,1            | 14 | TA211544.1250          | TA511544.1250           |                         |
| 12,55                  |                                                                                    | M13x1 (GAL) / G1/4                                                                 | 124            | 77             | 60             | 45             | 2,1            | 14 | TA211544.1255          | TA511544.1255           |                         |
| 12,60                  | MJ14x1,5                                                                           | M13x1                                                                              | 124            | 77             | 60             | 45             | 2,1            | 14 | TA211544.1260          | TA511544.1260           |                         |
| 12,70                  |                                                                                    | M13x0,75                                                                           | 124            | 77             | 60             | 45             | 2,2            | 14 | TA211544.1270          | TA511544.1270           |                         |
| 12,80                  | M14x1,25                                                                           |                                                                                    | 124            | 77             | 60             | 45             | 2,2            | 14 | TA211544.1280          | TA511544.1280           |                         |
| 12,90                  | MJ14x1,25 / 9/16-18                                                                |                                                                                    | 124            | 77             | 60             | 45             | 2,2            | 14 | TA211544.1290          | TA511544.1290           |                         |
| 13,00                  | M14x1                                                                              |                                                                                    | 124            | 77             | 60             | 45             | 2,2            | 14 | TA211544.1300          | TA511544.1300           |                         |
| 13,10                  | MJ14x1                                                                             | M14                                                                                | 124            | 77             | 60             | 45             | 2,2            | 14 | TA211544.1310          | TA511544.1310           |                         |
| 13,20                  | M14x0,75                                                                           |                                                                                    | 124            | 77             | 60             | 45             | 2,2            | 14 | TA211544.1320          | TA511544.1320           |                         |
| 13,30                  |                                                                                    | 9/16-12                                                                            | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211544.1330          | TA511544.1330           |                         |
| 13,35                  |                                                                                    | M14x1,5                                                                            | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211544.1335          | TA511544.1335           |                         |
| 13,45                  |                                                                                    | M14x1,25                                                                           | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211544.1345          | TA511544.1345           |                         |
| 13,49                  |                                                                                    |                                                                                    | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211544.1349          | TA511544.1349           |                         |
| 13,50                  | 5/8-11                                                                             |                                                                                    | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211544.1350          | TA511544.1350           |                         |
| 13,60                  | MJ15x1,5                                                                           | M14x1 / 9/16-18 (GAL)                                                              | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211544.1360          | TA511544.1360           |                         |
| 13,65                  |                                                                                    | 9/16-18                                                                            | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211544.1365          | TA511544.1365           |                         |
| 13,70                  |                                                                                    | M14x0,75                                                                           | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211544.1370          | TA511544.1370           |                         |
| 13,80                  |                                                                                    |                                                                                    | 124            | 77             | 60             | 45             | 2,3            | 14 | TA211544.1380          | TA511544.1380           |                         |
| 13,89                  |                                                                                    |                                                                                    | 124            | 77             | 60             | 45             | 2,4            | 14 | TA211544.1389          | TA511544.1389           |                         |
| 14,00                  | M16 / M15x1                                                                        |                                                                                    | 124            | 77             | 60             | 45             | 2,4            | 14 | TA211544.1400          | TA511544.1400           |                         |
| 14,10                  | MJ15x1                                                                             |                                                                                    | 133            | 83             | 63             | 48             | 2,4            | 16 | TA211544.1410          | TA511544.1410           |                         |
| 14,20                  | M15x0,75                                                                           |                                                                                    | 133            | 83             | 63             | 48             | 2,4            | 16 | TA211544.1420          | TA511544.1420           |                         |
| 14,29                  |                                                                                    |                                                                                    | 133            | 83             | 63             | 48             | 2,4            | 16 | TA211544.1429          | TA511544.1429           |                         |
| 14,30                  |                                                                                    |                                                                                    | 133            | 83             | 63             | 48             | 2,4            | 16 | TA211544.1430          | TA511544.1430           |                         |
| 14,40                  |                                                                                    |                                                                                    | 133            | 83             | 63             | 48             | 2,4            | 16 | TA211544.1440          | TA511544.1440           |                         |
| 14,50                  | M16x1,5 / 5/8-18                                                                   |                                                                                    | 133            | 83             | 63             | 48             | 2,5            | 16 | TA211544.1450          | TA511544.1450           |                         |
| 14,60                  | MJ16x1,5                                                                           | M15x1                                                                              | 133            | 83             | 63             | 48             | 2,5            | 16 | TA211544.1460          | TA511544.1460           |                         |
| 14,68                  |                                                                                    |                                                                                    | 133            | 83             | 63             | 48             | 2,5            | 16 | TA211544.1468          | TA511544.1468           |                         |
| 14,70                  |                                                                                    | M15x0,75                                                                           | 133            | 83             | 63             | 48             | 2,5            | 16 | TA211544.1470          | TA511544.1470           |                         |
| 14,80                  |                                                                                    | 5/8-11                                                                             | 133            | 83             | 63             | 48             | 2,5            | 16 | TA211544.1480          | TA511544.1480           |                         |
| 15,00                  | M16x1                                                                              |                                                                                    | 133            | 83             | 63             | 48             | 2,5            | 16 | TA211544.1500          | TA511544.1500           |                         |
| 15,08                  |                                                                                    |                                                                                    | 133            | 83             | 63             | 48             | 2,6            | 16 | TA211544.1508          | TA511544.1508           |                         |
| 15,10                  | MJ16x1                                                                             | M16                                                                                | 133            | 83             | 63             | 48             | 2,6            | 16 | TA211544.1510          | TA511544.1510           |                         |
| 15,20                  | M16x0,75                                                                           | 5/8-18 (GAL)                                                                       | 133            | 83             | 63             | 48             | 2,6            | 16 | TA211544.1520          | TA511544.1520           |                         |
| 15,25                  | G3/8                                                                               | 5/8-18                                                                             | 133            | 83             | 63             | 48             | 2,6            | 16 | TA211544.1525          | TA511544.1525           |                         |
| 15,35                  |                                                                                    | M16x1,5                                                                            | 133            | 83             | 63             | 48             | 2,6            | 16 | TA211544.1535          | TA511544.1535           |                         |
| 15,50                  | M18                                                                                |                                                                                    | 133            | 83             | 63             | 48             | 2,6            | 16 | TA211544.1550          | TA511544.1550           |                         |
| 15,60                  |                                                                                    | M16x1                                                                              | 133            | 83             | 63             | 48             | 2,6            | 16 | TA211544.1560          | TA511544.1560           |                         |
| 15,80                  | MJ18x2,5                                                                           |                                                                                    | 133            | 83             | 63             | 48             | 2,7            | 16 | TA211544.1580          | TA511544.1580           |                         |
| 15,88                  |                                                                                    |                                                                                    | 133            | 83             | 63             | 48             | 2,7            | 16 | TA211544.1588          | TA511544.1588           |                         |
| 16,00                  | M18x2                                                                              |                                                                                    | 133            | 83             | 63             | 48             | 2,7            | 16 | TA211544.1600          | TA511544.1600           |                         |
| 16,27                  |                                                                                    |                                                                                    | 143            | 93             | 71             | 48             | 2,8            | 18 | TA211544.1627          | TA511544.1627           |                         |
| 16,50                  | M18x1,5 / 3/4-10                                                                   |                                                                                    | 143            | 93             | 71             | 48             | 2,8            | 18 | TA211544.1650          | TA511544.1650           |                         |
| 16,67                  |                                                                                    |                                                                                    | 143            | 93             | 71             | 48             | 2,8            | 18 | TA211544.1667          | TA511544.1667           |                         |
| 17,00                  | M18x1                                                                              |                                                                                    | 143            | 93             | 71             | 48             | 2,9            | 18 | TA211544.1700          | TA511544.1700           |                         |
| 17,46                  |                                                                                    |                                                                                    | 143            | 93             | 71             | 48             | 3,0            | 18 | TA211544.1746          | TA511544.1746           |                         |

## SteelDrill-SD102

VHM  
Carbide

ALTIN

DIN  
6537 L

R30

Z2

4FF

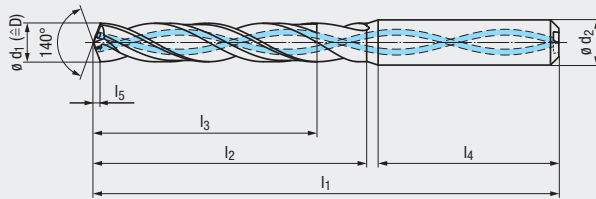


140°



IT9-IT10

DIN 6535

HA  
HESTEEL  
Steel  
materials
**5 x D** Lange Ausführung  
Long design
Bohrtiefe  
Drill depthEinsatzgebiete – Material  
Applications – material

» 14

|                        | Gewindebohrer<br>Taps                                                              | Gewindeformer<br>Cold-forming taps                                                 |     |     |    |    |     |                        |               | SteelDrill<br>SD102-5xD | SteelDrill<br>SD102-5xD |
|------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----|-----|----|----|-----|------------------------|---------------|-------------------------|-------------------------|
| Ø d <sub>1</sub><br>m7 |  |  |     |     |    |    |     | Ø d <sub>2</sub><br>h6 | HA            | HE                      |                         |
| 17,50                  | M20 / 3/4-16                                                                       | M18x1                                                                              | 143 | 93  | 71 | 48 | 3,0 | 18                     | TA211544.1750 | TA511544.1750           |                         |
| 17,60                  |                                                                                    |                                                                                    | 143 | 93  | 71 | 48 | 3,0 | 18                     | TA211544.1760 | TA511544.1760           |                         |
| 18,00                  | M20x2                                                                              |                                                                                    | 143 | 93  | 71 | 48 | 3,1 | 18                     | TA211544.1800 | TA511544.1800           |                         |
| 18,50                  | M20x1,5                                                                            | M20                                                                                | 153 | 101 | 77 | 50 | 3,1 | 20                     | TA211544.1850 | TA511544.1850           |                         |
| 18,85                  |                                                                                    |                                                                                    | 153 | 101 | 77 | 50 | 3,2 | 20                     | TA211544.1885 | TA511544.1885           |                         |
| 19,00                  | M20x1 / G1/2                                                                       |                                                                                    | 153 | 101 | 77 | 50 | 3,2 | 20                     | TA211544.1900 | TA511544.1900           |                         |
| 19,05                  |                                                                                    | M20x1,5                                                                            | 153 | 101 | 77 | 50 | 3,2 | 20                     | TA211544.1905 | TA511544.1905           |                         |
| 19,35                  |                                                                                    |                                                                                    | 153 | 101 | 77 | 50 | 3,3 | 20                     | TA211544.1935 | TA511544.1935           |                         |
| 19,50                  | M22 / 7/8-9                                                                        |                                                                                    | 153 | 101 | 77 | 50 | 3,3 | 20                     | TA211544.1950 | TA511544.1950           |                         |
| 19,60                  |                                                                                    | M20x1                                                                              | 153 | 101 | 77 | 50 | 3,3 | 20                     | TA211544.1960 | TA511544.1960           |                         |
| 20,00                  | M22x2                                                                              |                                                                                    | 153 | 101 | 77 | 50 | 3,4 | 20                     | TA211544.2000 | TA511544.2000           |                         |

**5 x D**
**P** 1.1-5.1 **K** 1.1-4.2  
**S** 1.2-1.3, 2.2-2.3 **H** 1.1-1.3
Product  
Finderv<sub>c</sub> / f

BASIC

STEEL

INOX

G

HCUT

SpotDrill

Zubehör  
Accessories

3 x D

5 x D

6 x D

8 x D

12 x D

2-3,5 x D


 Werkzeug-Aufnahmen für Zylinderschäfte  
 mit geneigter Spannfläche  
 siehe Seite 66 - 67

 Tool holders for straight shanks  
 with inclined clamping flat,  
 see page 66 - 67

- Product Finder
- $v_c / f$
- BASIC
- STEEL
- INOX
- GG
- HCUT
- SpotDrill
- Zubehör Accessories
- 3 x D
- 5 x D
- 6 x D
- 8 x D
- 12 x D
- 2-3,5 x D

### EF-Drill-STEEL

VHM  
Carbide

TIALN

R30

Z2

4FF



140°



IT9-IT11

DIN 6535

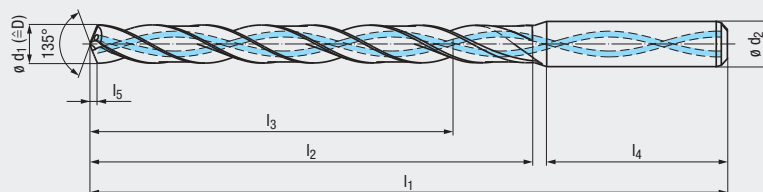


STEEL  
Steel  
materials



## 8xD

Extra lange Ausführung  
Extra longong design



Eine Vorzentrierung durch den Einsatz eines Vorbohrers (z.B. NC SpotDrill) wird empfohlen  
Preparatory centering with a centering drill (p.ex. NC SpotDrill) is recommended

Bohrtiefe  
Drill depth

## 8 x D

Einsatzgebiete – Material  
Applications – material



|   |         |   |         |   |         |
|---|---------|---|---------|---|---------|
| P | 1.1-5.1 | K | 1.1-4.2 | N | 1.1-2.8 |
| S | 1.2-1.3 | S | 2.2-2.3 | H | 1.1-1.3 |

| $\emptyset d_1$<br>m7 | Gewindebohrer<br>Taps   | Gewindeformer<br>Cold-forming taps |       |       |       |       |       | $\emptyset d_2$<br>h6 | EF-Drill<br>STEEL-8xD | HA |
|-----------------------|-------------------------|------------------------------------|-------|-------|-------|-------|-------|-----------------------|-----------------------|----|
|                       |                         |                                    | $l_1$ | $l_2$ | $l_3$ | $l_4$ | $l_5$ |                       |                       |    |
| 2,80                  |                         | M3                                 | 70    | 30    | 24    | 36    | 0,6   | 6                     | TA223344.0280         |    |
| 2,85                  | #6-32                   |                                    | 70    | 30    | 24    | 36    | 0,6   | 6                     | TA223344.0285         |    |
| 2,90                  | M3,5                    | #5-40                              | 70    | 30    | 24    | 36    | 0,7   | 6                     | TA223344.0290         |    |
| 3,00                  | M3,5x0,5 / MJ3,5x0,6    |                                    | 78    | 38    | 30    | 36    | 0,7   | 6                     | TA223344.0300         |    |
| 3,10                  |                         |                                    | 78    | 38    | 30    | 36    | 0,7   | 6                     | TA223344.0310         |    |
| 3,15                  | M3,5x0,35               | #6-32                              | 78    | 38    | 30    | 36    | 0,7   | 6                     | TA223344.0315         |    |
| 3,20                  | MJ3,5x0,35              |                                    | 78    | 38    | 30    | 36    | 0,7   | 6                     | TA223344.0320         |    |
| 3,25                  |                         | M3,5                               | 78    | 38    | 30    | 36    | 0,7   | 6                     | TA223344.0325         |    |
| 3,30                  | M4                      | M3,5x0,5                           | 78    | 38    | 30    | 36    | 0,7   | 6                     | TA223344.0330         |    |
| 3,35                  |                         |                                    | 78    | 38    | 30    | 36    | 0,7   | 6                     | TA223344.0335         |    |
| 3,38                  |                         | M3,5x0,35                          | 78    | 38    | 30    | 36    | 0,8   | 6                     | TA223344.0338         |    |
| 3,40                  | MJ4x0,7                 |                                    | 78    | 38    | 30    | 36    | 0,8   | 6                     | TA223344.0340         |    |
| 3,50                  | M4x0,5 / #8-32 / #8-36  |                                    | 78    | 38    | 30    | 36    | 0,8   | 6                     | TA223344.0350         |    |
| 3,55                  |                         |                                    | 78    | 38    | 30    | 36    | 0,8   | 6                     | TA223344.0355         |    |
| 3,60                  | MJ4x0,5                 |                                    | 78    | 38    | 30    | 36    | 0,8   | 6                     | TA223344.0360         |    |
| 3,65                  | M4x0,35                 |                                    | 78    | 38    | 30    | 36    | 0,8   | 6                     | TA223344.0365         |    |
| 3,70                  | M4,5                    | M4                                 | 78    | 38    | 30    | 36    | 0,8   | 6                     | TA223344.0370         |    |
| 3,80                  |                         | M4x0,5 / #8-32                     | 88    | 48    | 38    | 36    | 0,8   | 6                     | TA223344.0380         |    |
| 3,88                  |                         | M4x0,35                            | 88    | 48    | 38    | 36    | 0,9   | 6                     | TA223344.0388         |    |
| 3,90                  | MJ4,5x0,75 / #10-24     |                                    | 88    | 48    | 38    | 36    | 0,9   | 6                     | TA223344.0390         |    |
| 4,00                  |                         |                                    | 88    | 48    | 38    | 36    | 0,9   | 6                     | TA223344.0400         |    |
| 4,10                  | MJ4,5x0,5 / #10-32      |                                    | 88    | 48    | 38    | 36    | 0,9   | 6                     | TA223344.0410         |    |
| 4,15                  | M5x0,9                  |                                    | 88    | 48    | 38    | 36    | 0,9   | 6                     | TA223344.0415         |    |
| 4,20                  | M5 / M5x0,75            | M4,5                               | 88    | 48    | 38    | 36    | 0,9   | 6                     | TA223344.0420         |    |
| 4,30                  | MJ5x0,8                 | M4,5x0,5 / #10-24 (GAL)            | 88    | 48    | 38    | 36    | 0,9   | 6                     | TA223344.0430         |    |
| 4,35                  |                         | #10-24                             | 88    | 48    | 38    | 36    | 1,0   | 6                     | TA223344.0435         |    |
| 4,40                  |                         |                                    | 88    | 48    | 38    | 36    | 1,0   | 6                     | TA223344.0440         |    |
| 4,45                  |                         | #10-32                             | 88    | 48    | 38    | 36    | 1,0   | 6                     | TA223344.0445         |    |
| 4,50                  | M5x0,5 / #12-24         |                                    | 88    | 48    | 38    | 36    | 1,0   | 6                     | TA223344.0450         |    |
| 4,60                  | M5,5 / MJ5x0,5 / #12-28 |                                    | 88    | 48    | 38    | 36    | 1,0   | 6                     | TA223344.0460         |    |
| 4,65                  |                         | M5                                 | 88    | 48    | 38    | 36    | 1,0   | 6                     | TA223344.0465         |    |
| 4,70                  |                         | M5x0,75                            | 88    | 48    | 38    | 36    | 1,0   | 6                     | TA223344.0470         |    |
| 4,80                  |                         | M5x0,5                             | 97    | 60    | 48    | 36    | 1,0   | 6                     | TA223344.0480         |    |
| 4,90                  |                         |                                    | 97    | 60    | 48    | 36    | 1,1   | 6                     | TA223344.0490         |    |
| 5,00                  | M6                      | #12-24                             | 97    | 60    | 48    | 36    | 1,1   | 6                     | TA223344.0500         |    |
| 5,10                  | MJ6x1 / 1/4-20          | M5,5 / #12-28                      | 97    | 60    | 48    | 36    | 1,1   | 6                     | TA223344.0510         |    |
| 5,20                  | M6x0,75                 |                                    | 97    | 60    | 48    | 36    | 1,1   | 6                     | TA223344.0520         |    |
| 5,25                  |                         |                                    | 97    | 60    | 48    | 36    | 1,1   | 6                     | TA223344.0525         |    |
| 5,30                  |                         | M5,5x0,5                           | 97    | 60    | 48    | 36    | 1,1   | 6                     | TA223344.0530         |    |
| 5,40                  |                         |                                    | 97    | 60    | 48    | 36    | 1,2   | 6                     | TA223344.0540         |    |
| 5,50                  | M6x0,5 / 1/4-28         |                                    | 97    | 60    | 48    | 36    | 1,2   | 6                     | TA223344.0550         |    |
| 5,55                  |                         | M6 (GAL)                           | 97    | 60    | 48    | 36    | 1,2   | 6                     | TA223344.0555         |    |

## EF-Drill-STEEL

VHM  
Carbide

TIALN

R30

Z2

4FF



140°

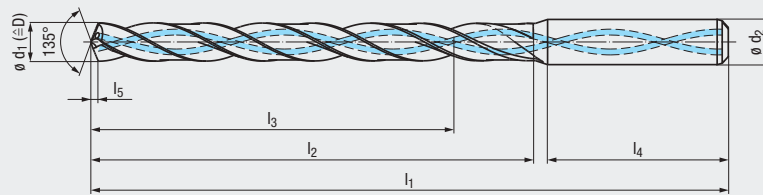


DIN 6535

HA

# 8 x D

Extra lange Ausführung  
Extra longong design



Eine Vorzentrierung durch den Einsatz eines Vorbohrers (z.B. NC SpotDrill) wird empfohlen  
Preparatory centering with a centering drill (p.ex. NC SpotDrill) is recommended

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material

» 14

## 8 x D

P 1.1-5.1 K 1.1-4.2 N 1.1-2.8  
S 1.2-1.3 S 2.2-2.3 H 1.1-1.3

| ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | ø d <sub>2</sub><br>h6 | EF-Drill<br>STEEL-8xD<br>HA |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-----------------------------|
| 5,60                   | MJ6x0,5               | M6                                 | 97             | 60             | 48             | 36             | 1,2            | 6                      | TA223344.0560               |
| 5,70                   |                       | M6x0,75 / 1/4-20 (GAL)             | 97             | 60             | 48             | 36             | 1,2            | 6                      | TA223344.0570               |
| 5,80                   |                       | M6x0,5                             | 97             | 60             | 48             | 36             | 1,3            | 6                      | TA223344.0580               |
| 5,90                   |                       |                                    | 97             | 60             | 48             | 36             | 1,3            | 6                      | TA223344.0590               |
| 6,00                   | M7                    |                                    | 97             | 60             | 48             | 36             | 1,3            | 6                      | TA223344.0600               |
| 6,10                   | MJ7x1                 |                                    | 107            | 70             | 56             | 36             | 1,3            | 8                      | TA223344.0610               |
| 6,20                   | M7x0,75               |                                    | 107            | 70             | 56             | 36             | 1,3            | 8                      | TA223344.0620               |
| 6,30                   |                       |                                    | 107            | 70             | 56             | 36             | 1,4            | 8                      | TA223344.0630               |
| 6,35                   | MJ7x0,75              |                                    | 107            | 70             | 56             | 36             | 1,4            | 8                      | TA223344.0635               |
| 6,40                   |                       |                                    | 107            | 70             | 56             | 36             | 1,4            | 8                      | TA223344.0640               |
| 6,50                   | M7x0,5                |                                    | 107            | 70             | 56             | 36             | 1,4            | 8                      | TA223344.0650               |
| 6,60                   | 5/16-18               | M7                                 | 107            | 70             | 56             | 36             | 1,4            | 8                      | TA223344.0660               |
| 6,70                   |                       | M7x0,75                            | 107            | 70             | 56             | 36             | 1,4            | 8                      | TA223344.0670               |
| 6,80                   | M8 / G1/16            | M7x0,5                             | 107            | 70             | 56             | 36             | 1,5            | 8                      | TA223344.0680               |
| 6,90                   | MJ8x1,25 / 5/16-24    |                                    | 107            | 70             | 56             | 36             | 1,5            | 8                      | TA223344.0690               |
| 7,00                   | M8x1                  |                                    | 107            | 70             | 56             | 36             | 1,5            | 8                      | TA223344.0700               |
| 7,10                   | MJ8x1                 |                                    | 117            | 80             | 64             | 36             | 1,5            | 8                      | TA223344.0710               |
| 7,20                   | M8x0,75               |                                    | 117            | 80             | 64             | 36             | 1,5            | 8                      | TA223344.0720               |
| 7,30                   |                       | 5/16-18                            | 117            | 80             | 64             | 36             | 1,6            | 8                      | TA223344.0730               |
| 7,40                   |                       | M8 (GAL) / 5/16-24 (GAL)           | 117            | 80             | 64             | 36             | 1,6            | 8                      | TA223344.0740               |
| 7,45                   |                       | M8 / 5/16-24                       | 117            | 80             | 64             | 36             | 1,6            | 8                      | TA223344.0745               |
| 7,50                   | M8x0,5                |                                    | 117            | 80             | 64             | 36             | 1,6            | 8                      | TA223344.0750               |
| 7,60                   |                       | M8x1                               | 117            | 80             | 64             | 36             | 1,6            | 8                      | TA223344.0760               |
| 7,70                   |                       | M8x0,75                            | 117            | 80             | 64             | 36             | 1,6            | 8                      | TA223344.0770               |
| 7,80                   | M9                    | M8x0,5                             | 117            | 80             | 64             | 36             | 1,7            | 8                      | TA223344.0780               |
| 7,90                   | MJ9x1,25              |                                    | 117            | 80             | 64             | 36             | 1,7            | 8                      | TA223344.0790               |
| 8,00                   | M9x1 / 3/8-16         |                                    | 117            | 80             | 64             | 36             | 1,7            | 8                      | TA223344.0800               |
| 8,10                   | MJ9x1                 |                                    | 141            | 100            | 80             | 40             | 1,7            | 10                     | TA223344.0810               |
| 8,20                   | M9x0,75               |                                    | 141            | 100            | 80             | 40             | 1,7            | 10                     | TA223344.0820               |
| 8,30                   |                       |                                    | 141            | 100            | 80             | 40             | 1,8            | 10                     | TA223344.0830               |
| 8,40                   |                       | M9 (GAL)                           | 141            | 100            | 80             | 40             | 1,8            | 10                     | TA223344.0840               |
| 8,45                   |                       | M9                                 | 141            | 100            | 80             | 40             | 1,8            | 10                     | TA223344.0845               |
| 8,50                   | M10 / M9x0,5 / 3/8-24 |                                    | 141            | 100            | 80             | 40             | 1,8            | 10                     | TA223344.0850               |
| 8,60                   | MJ10x1,5              | M9x1                               | 141            | 100            | 80             | 40             | 1,8            | 10                     | TA223344.0860               |
| 8,70                   |                       | M9x0,75                            | 141            | 100            | 80             | 40             | 1,9            | 10                     | TA223344.0870               |
| 8,80                   | M10x1,25 / G1/8       | M9x0,5 / 3/8-16                    | 141            | 100            | 80             | 40             | 1,9            | 10                     | TA223344.0880               |
| 8,90                   | MJ10x1,25             |                                    | 141            | 100            | 80             | 40             | 1,9            | 10                     | TA223344.0890               |
| 9,00                   | M10x1                 | 3/8-24 (GAL)                       | 141            | 100            | 80             | 40             | 1,9            | 10                     | TA223344.0900               |
| 9,10                   | MJ10x1                |                                    | 141            | 100            | 80             | 40             | 1,9            | 10                     | TA223344.0910               |
| 9,20                   | M10x0,75              |                                    | 141            | 100            | 80             | 40             | 2,0            | 10                     | TA223344.0920               |
| 9,30                   |                       | M10 (GAL)                          | 141            | 100            | 80             | 40             | 2,0            | 10                     | TA223344.0930               |
| 9,35                   | MJ10x0,75             | M10                                | 141            | 100            | 80             | 40             | 2,0            | 10                     | TA223344.0935               |

ø 9,40 mm - ø 20,00 mm →



- Product Finder
- $v_c / f$
- BASIC
- STEEL
- INOX
- GG
- HCUT
- SpotDrill
- Zubehör Accessories
- 3 x D
- 5 x D
- 6 x D
- 8 x D
- 12 x D
- 2-3,5 x D

### EF-Drill-STEEL

VHM  
Carbide

TIALN

R30

Z2

4FF



135°



IT9-IT11

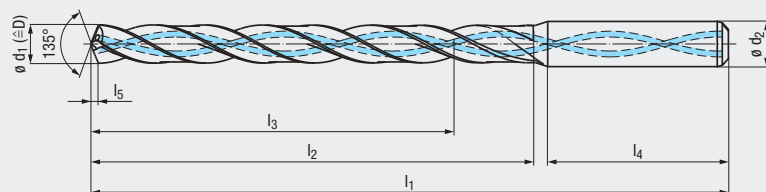
DIN 6535

HA

STEEL  
Steel  
materials



**8 x D** Extra lange Ausführung  
Extra longong design



Eine Vorzentrierung durch den Einsatz eines Vorbohrers (z.B. NC SpotDrill) wird empfohlen  
Preparatory centering with a centering drill (p.ex. NC SpotDrill) is recommended

Bohrtiefe  
Drill depth

**8 x D**

Einsatzgebiete – Material  
Applications – material

14

P 1.1-5.1 K 1.1-4.2 N 1.1-2.8  
S 1.2-1.3 S 2.2-2.3 H 1.1-1.3

| $\emptyset d_1$<br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps |       |       |       |       |       | $\emptyset d_2$<br>h6 | EF-Drill<br>STEEL-8xD | HA |
|-----------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-----------------------|-----------------------|----|
|                       |                       |                                    | $l_1$ | $l_2$ | $l_3$ | $l_4$ | $l_5$ |                       |                       |    |
| 9,40                  | 7/16-14               | M10x1,25 (GAL)                     | 141   | 100   | 80    | 40    | 2,0   | 10                    | TA223344.0940         |    |
| 9,45                  |                       | M10x1,25                           | 141   | 100   | 80    | 40    | 2,0   | 10                    | TA223344.0945         |    |
| 9,50                  | M11 / M10x0,5         |                                    | 141   | 100   | 80    | 40    | 2,0   | 10                    | TA223344.0950         |    |
| 9,60                  | MJ10x0,5 / MJ11x1,5   | M10x1                              | 141   | 100   | 80    | 40    | 2,0   | 10                    | TA223344.0960         |    |
| 9,70                  |                       | M10x0,75                           | 141   | 100   | 80    | 40    | 2,1   | 10                    | TA223344.0970         |    |
| 9,80                  |                       | M10x0,5                            | 141   | 100   | 80    | 40    | 2,1   | 10                    | TA223344.0980         |    |
| 9,90                  | MJ11x1,25 / 7/16-20   |                                    | 141   | 100   | 80    | 40    | 2,1   | 10                    | TA223344.0990         |    |
| 10,00                 | M11x1                 |                                    | 141   | 100   | 80    | 40    | 2,1   | 10                    | TA223344.1000         |    |
| 10,10                 | MJ11x1                |                                    | 166   | 120   | 96    | 45    | 2,1   | 12                    | TA223344.1010         |    |
| 10,20                 | M12 / M11x0,75        | 7/16-14 (GAL)                      | 166   | 120   | 96    | 45    | 2,2   | 12                    | TA223344.1020         |    |
| 10,30                 |                       | M11 (GAL)                          | 166   | 120   | 96    | 45    | 2,2   | 12                    | TA223344.1030         |    |
| 10,35                 | MJ11x0,75             | M11                                | 166   | 120   | 96    | 45    | 2,2   | 12                    | TA223344.1035         |    |
| 10,40                 |                       |                                    | 166   | 120   | 96    | 45    | 2,2   | 12                    | TA223344.1040         |    |
| 10,50                 | M12x1,5               | 7/16-20 (GAL)                      | 166   | 120   | 96    | 45    | 2,2   | 12                    | TA223344.1050         |    |
| 10,60                 | MJ12x1,5              | M11x1                              | 166   | 120   | 96    | 45    | 2,2   | 12                    | TA223344.1060         |    |
| 10,70                 |                       | M11x0,75                           | 166   | 120   | 96    | 45    | 2,3   | 12                    | TA223344.1070         |    |
| 10,80                 | M12x1,25 / 1/2-13     |                                    | 166   | 120   | 96    | 45    | 2,3   | 12                    | TA223344.1080         |    |
| 10,90                 | MJ12x1,25             |                                    | 166   | 120   | 96    | 45    | 2,3   | 12                    | TA223344.1090         |    |
| 11,00                 | M12x1                 |                                    | 166   | 120   | 96    | 45    | 2,3   | 12                    | TA223344.1100         |    |
| 11,10                 | MJ12x1                |                                    | 166   | 120   | 96    | 45    | 2,3   | 12                    | TA223344.1110         |    |
| 11,20                 | M12x0,75              | M12 (GAL)                          | 166   | 120   | 96    | 45    | 2,4   | 12                    | TA223344.1120         |    |
| 11,25                 |                       | M12                                | 166   | 120   | 96    | 45    | 2,4   | 12                    | TA223344.1125         |    |
| 11,30                 |                       | M12x1,5 (GAL)                      | 166   | 120   | 96    | 45    | 2,4   | 12                    | TA223344.1130         |    |
| 11,35                 |                       | M12x1,5                            | 166   | 120   | 96    | 45    | 2,4   | 12                    | TA223344.1135         |    |
| 11,40                 |                       | M12x1,25 (GAL)                     | 166   | 120   | 96    | 45    | 2,4   | 12                    | TA223344.1140         |    |
| 11,45                 |                       | M12x1,25                           | 166   | 120   | 96    | 45    | 2,4   | 12                    | TA223344.1145         |    |
| 11,50                 | 1/2-20                |                                    | 166   | 120   | 96    | 45    | 2,4   | 12                    | TA223344.1150         |    |
| 11,60                 |                       | M12x1                              | 166   | 120   | 96    | 45    | 2,5   | 12                    | TA223344.1160         |    |
| 11,70                 |                       | M12x0,75                           | 166   | 120   | 96    | 45    | 2,5   | 12                    | TA223344.1170         |    |
| 11,80                 | G1/4                  | 1/2-13                             | 166   | 120   | 96    | 45    | 2,5   | 12                    | TA223344.1180         |    |
| 11,90                 |                       |                                    | 166   | 120   | 96    | 45    | 2,5   | 12                    | TA223344.1190         |    |
| 12,00                 | M14                   |                                    | 166   | 120   | 96    | 45    | 2,5   | 12                    | TA223344.1200         |    |
| 12,20                 | 9/16-12               |                                    | 186   | 140   | 112   | 45    | 2,6   | 14                    | TA223344.1220         |    |
| 12,30                 |                       |                                    | 186   | 140   | 112   | 45    | 2,6   | 14                    | TA223344.1230         |    |
| 12,50                 | M14x1,5               | G1/4 (GAL)                         | 186   | 140   | 112   | 45    | 2,6   | 14                    | TA223344.1250         |    |
| 12,60                 | MJ14x1,5              | M13x1                              | 186   | 140   | 112   | 45    | 2,7   | 14                    | TA223344.1260         |    |
| 12,70                 |                       | M13x0,75                           | 186   | 140   | 112   | 45    | 2,7   | 14                    | TA223344.1270         |    |
| 12,80                 | M14x1,25              |                                    | 186   | 140   | 112   | 45    | 2,7   | 14                    | TA223344.1280         |    |
| 12,90                 | MJ14x1,25 / 9/16-18   |                                    | 186   | 140   | 112   | 45    | 2,7   | 14                    | TA223344.1290         |    |
| 13,00                 | M14x1                 |                                    | 186   | 140   | 112   | 45    | 2,7   | 14                    | TA223344.1300         |    |
| 13,10                 | MJ14x1                | M14                                | 186   | 140   | 112   | 45    | 2,8   | 14                    | TA223344.1310         |    |
| 13,20                 | M14x0,75              |                                    | 186   | 140   | 112   | 45    | 2,8   | 14                    | TA223344.1320         |    |



## EF-Drill-STEEL

VHM  
Carbide

TIALN

R30

Z2

4FF



135°

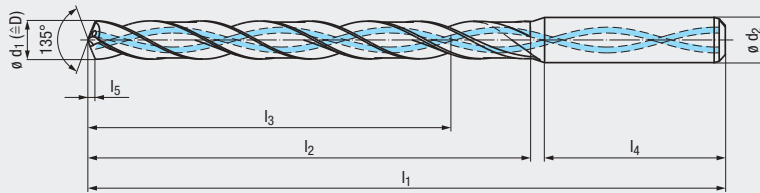


DIN 6535



# 8 x D

Extra lange Ausführung  
Extra longong design



Eine Vorzentrierung durch den Einsatz eines Vorbohrers (z.B. NC SpotDrill) wird empfohlen  
Preparatory centering with a centering drill (p.ex. NC SpotDrill) is recommended

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material

» 14

## 8 x D

P 1.1-5.1 K 1.1-4.2 N 1.1-2.8  
S 1.2-1.3 S 2.2-2.3 H 1.1-1.3

| ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | ø d <sub>2</sub><br>h6 | EF-Drill<br>STEEL-8xD<br>HA |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-----------------------------|
| 13,30                  |                       | 9/16-12                            | 186            | 140            | 112            | 45             | 2,8            | 14                     | TA223344.1330               |
| 13,35                  |                       | M14x1,5                            | 186            | 140            | 112            | 45             | 2,8            | 14                     | TA223344.1335               |
| 13,45                  |                       | M14x1,25                           | 186            | 140            | 112            | 45             | 2,8            | 14                     | TA223344.1345               |
| 13,50                  | 5/8-11                |                                    | 186            | 140            | 112            | 45             | 2,8            | 14                     | TA223344.1350               |
| 13,60                  | MJ15x1,5              | M14x1 / 9/16-18 (GAL)              | 186            | 140            | 112            | 45             | 2,9            | 14                     | TA223344.1360               |
| 13,70                  |                       | M14x0,75                           | 186            | 140            | 112            | 45             | 2,9            | 14                     | TA223344.1370               |
| 13,80                  |                       |                                    | 186            | 140            | 112            | 45             | 2,9            | 14                     | TA223344.1380               |
| 14,00                  | M16 / M15x1           |                                    | 186            | 140            | 112            | 45             | 2,9            | 14                     | TA223344.1400               |
| 14,10                  | MJ15x1                |                                    | 209            | 160            | 128            | 48             | 3,0            | 16                     | TA223344.1410               |
| 14,30                  |                       |                                    | 209            | 160            | 128            | 48             | 3,0            | 16                     | TA223344.1430               |
| 14,40                  |                       |                                    | 209            | 160            | 128            | 48             | 3,0            | 16                     | TA223344.1440               |
| 14,50                  | M16x1,5 / 5/8-18      |                                    | 209            | 160            | 128            | 48             | 3,1            | 16                     | TA223344.1450               |
| 14,60                  | MJ16x1,5              | M15x1                              | 209            | 160            | 128            | 48             | 3,1            | 16                     | TA223344.1460               |
| 14,70                  |                       | M15x0,75                           | 209            | 160            | 128            | 48             | 3,1            | 16                     | TA223344.1470               |
| 14,80                  |                       | 5/8-11                             | 209            | 160            | 128            | 48             | 3,1            | 16                     | TA223344.1480               |
| 15,00                  | M16x1                 |                                    | 209            | 160            | 128            | 48             | 3,2            | 16                     | TA223344.1500               |
| 15,10                  | MJ16x1                | M16                                | 209            | 160            | 128            | 48             | 3,2            | 16                     | TA223344.1510               |
| 15,35                  |                       | M16x1,5                            | 209            | 160            | 128            | 48             | 3,2            | 16                     | TA223344.1535               |
| 15,50                  | M18                   |                                    | 209            | 160            | 128            | 48             | 3,3            | 16                     | TA223344.1550               |
| 15,60                  |                       | M16x1                              | 209            | 160            | 128            | 48             | 3,3            | 16                     | TA223344.1560               |
| 16,00                  | M18x2                 |                                    | 209            | 160            | 128            | 48             | 3,4            | 16                     | TA223344.1600               |
| 16,50                  | M18x1,5 / 3/4-10      |                                    | 229            | 180            | 144            | 48             | 3,5            | 18                     | TA223344.1650               |
| 17,00                  | M18x1                 |                                    | 229            | 180            | 144            | 48             | 3,6            | 18                     | TA223344.1700               |
| 17,50                  | M20 / 3/4-16          |                                    | 229            | 180            | 144            | 48             | 3,7            | 18                     | TA223344.1750               |
| 17,60                  |                       | M18x1                              | 229            | 180            | 144            | 48             | 3,7            | 18                     | TA223344.1760               |
| 18,00                  | M20x2                 |                                    | 229            | 180            | 144            | 48             | 3,8            | 18                     | TA223344.1800               |
| 18,50                  | M20x1,5               |                                    | 251            | 200            | 160            | 50             | 3,9            | 20                     | TA223344.1850               |
| 18,85                  |                       | M20                                | 251            | 200            | 160            | 50             | 4,0            | 20                     | TA223344.1885               |
| 19,00                  | M20x1 / G1/2          |                                    | 251            | 200            | 160            | 50             | 4,0            | 20                     | TA223344.1900               |
| 19,35                  |                       | M20x1,5                            | 251            | 200            | 160            | 50             | 4,1            | 20                     | TA223344.1935               |
| 19,50                  | M22 / 7/8-9           |                                    | 251            | 200            | 160            | 50             | 4,1            | 20                     | TA223344.1950               |
| 19,60                  |                       | M20x1                              | 251            | 200            | 160            | 50             | 4,1            | 20                     | TA223344.1960               |
| 20,00                  | M22x2                 |                                    | 251            | 200            | 160            | 50             | 4,2            | 20                     | TA223344.2000               |

Product  
Finderv<sub>c</sub> / f

BASIC

STEEL

INOX

G

HCUT

SpotDrill

Zubehör  
Accessories

3 x D

5 x D

6 x D

8 x D

12 x D

2-3,5 x D



STEEL  
Steel  
materials

12 x D



VHM  
Carbide

TIALN

R30

Z2



4FF



135°



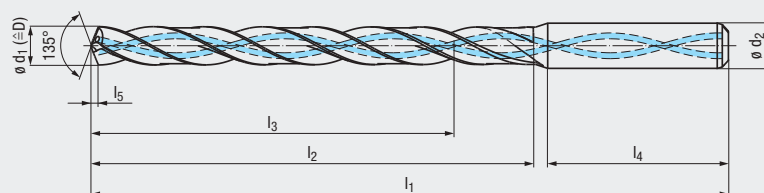
IT9-IT11

DIN 6535



SteelDrill-SD104

**12xD** Extra lange Ausführung  
Extra long design



Eine Vorzentrierung durch den Einsatz eines Vorbohrers (z.B. NC SpotDrill) wird empfohlen  
Preparatory centering with a centering drill (p.ex. NC SpotDrill) is recommended

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material

» 14

P 1.1-4.1 M 1.1  
K 1.1, 2.1-3.2 H 1.1

| Ø d <sub>1</sub><br>k7 | Gewindebohrer<br>Taps   | Gewindeformer<br>Cold-forming taps | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | Ø d <sub>2</sub><br>h6 | SteelDrill<br>SD104-12xD | HA |
|------------------------|-------------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|--------------------------|----|
| 3,00                   | M3,5x0,5 / MJ3,5x0,6    |                                    | 92             | 54             | 48             | 36             | 0,6            | 6                      | TA233344.0300            |    |
| 3,10                   |                         |                                    | 92             | 54             | 48             | 36             | 0,6            | 6                      | TA233344.0310            |    |
| 3,18                   |                         |                                    | 92             | 54             | 48             | 36             | 0,6            | 6                      | TA233344.0318            |    |
| 3,20                   | MJ3,5x0,35              |                                    | 92             | 54             | 48             | 36             | 0,6            | 6                      | TA233344.0320            |    |
| 3,30                   | M4                      | M3,5x0,5                           | 92             | 54             | 48             | 36             | 0,6            | 6                      | TA233344.0330            |    |
| 3,40                   | MJ4x0,7                 |                                    | 92             | 54             | 48             | 36             | 0,6            | 6                      | TA233344.0340            |    |
| 3,50                   | M4x0,5 / #8-32 / #8-36  |                                    | 92             | 54             | 48             | 36             | 0,6            | 6                      | TA233344.0350            |    |
| 3,57                   |                         |                                    | 92             | 54             | 48             | 36             | 0,7            | 6                      | TA233344.0357            |    |
| 3,60                   | MJ4x0,5                 |                                    | 92             | 54             | 48             | 36             | 0,7            | 6                      | TA233344.0360            |    |
| 3,70                   | M4,5                    | M4                                 | 92             | 54             | 48             | 36             | 0,7            | 6                      | TA233344.0370            |    |
| 3,80                   |                         | M4x0,5 / #8-32                     | 102            | 64             | 58             | 36             | 0,7            | 6                      | TA233344.0380            |    |
| 3,90                   | MJ4,5x0,75 / #10-24     |                                    | 102            | 64             | 58             | 36             | 0,7            | 6                      | TA233344.0390            |    |
| 3,97                   |                         |                                    | 102            | 64             | 58             | 36             | 0,7            | 6                      | TA233344.0397            |    |
| 4,00                   |                         |                                    | 102            | 64             | 58             | 36             | 0,7            | 6                      | TA233344.0400            |    |
| 4,04                   |                         |                                    | 102            | 64             | 58             | 36             | 0,7            | 6                      | TA233344.0404            |    |
| 4,10                   | MJ4,5x0,5 / #10-32      |                                    | 102            | 64             | 58             | 36             | 0,8            | 6                      | TA233344.0410            |    |
| 4,20                   | M5 / M5x0,75            | M4,5                               | 102            | 64             | 58             | 36             | 0,8            | 6                      | TA233344.0420            |    |
| 4,30                   | MJ5x0,8                 | M4,5x0,5 / #10-24 (GAL)            | 102            | 64             | 58             | 36             | 0,8            | 6                      | TA233344.0430            |    |
| 4,37                   |                         |                                    | 102            | 64             | 58             | 36             | 0,8            | 6                      | TA233344.0437            |    |
| 4,40                   |                         |                                    | 102            | 64             | 58             | 36             | 0,8            | 6                      | TA233344.0440            |    |
| 4,50                   | M5x0,5 / #12-24         |                                    | 102            | 64             | 58             | 36             | 0,8            | 6                      | TA233344.0450            |    |
| 4,60                   | M5,5 / MJ5x0,5 / #12-28 |                                    | 102            | 64             | 58             | 36             | 0,8            | 6                      | TA233344.0460            |    |
| 4,70                   |                         | M5x0,75                            | 102            | 64             | 58             | 36             | 0,9            | 6                      | TA233344.0470            |    |
| 4,76                   |                         |                                    | 116            | 78             | 70             | 36             | 0,9            | 6                      | TA233344.0476            |    |
| 4,80                   |                         | M5x0,5                             | 116            | 78             | 70             | 36             | 0,9            | 6                      | TA233344.0480            |    |
| 5,00                   | M6                      | #12-24                             | 116            | 78             | 70             | 36             | 0,9            | 6                      | TA233344.0500            |    |
| 5,10                   | MJ6x1 / 1/4-20          | M5,5 / #12-28                      | 116            | 78             | 70             | 36             | 0,9            | 6                      | TA233344.0510            |    |
| 5,11                   |                         |                                    | 116            | 78             | 70             | 36             | 0,9            | 6                      | TA233344.0511            |    |
| 5,16                   |                         |                                    | 116            | 78             | 70             | 36             | 0,9            | 6                      | TA233344.0516            |    |
| 5,20                   | M6x0,75                 |                                    | 116            | 78             | 70             | 36             | 1,0            | 6                      | TA233344.0520            |    |
| 5,40                   |                         |                                    | 116            | 78             | 70             | 36             | 1,0            | 6                      | TA233344.0540            |    |
| 5,41                   |                         |                                    | 116            | 78             | 70             | 36             | 1,0            | 6                      | TA233344.0541            |    |
| 5,50                   | M6x0,5 / 1/4-28         |                                    | 116            | 78             | 70             | 36             | 1,0            | 6                      | TA233344.0550            |    |
| 5,56                   |                         |                                    | 116            | 78             | 70             | 36             | 1,0            | 6                      | TA233344.0556            |    |
| 5,60                   | MJ6x0,5                 | M6                                 | 116            | 78             | 70             | 36             | 1,0            | 6                      | TA233344.0560            |    |
| 5,80                   |                         | M6x0,5                             | 116            | 78             | 70             | 36             | 1,1            | 6                      | TA233344.0580            |    |
| 5,90                   |                         |                                    | 116            | 78             | 70             | 36             | 1,1            | 6                      | TA233344.0590            |    |
| 5,95                   |                         | 1/4-28                             | 116            | 78             | 70             | 36             | 1,1            | 6                      | TA233344.0595            |    |

## SteelDrill-SD104

VHM  
Carbide

TIALN

R30

Z2

4FF



135°



DIN 6535

STEEL  
Steel  
materialsProduct  
Finderv<sub>c</sub> / f

BASIC

STEEL

INOX

G

HCUT

SpotDrill

Zubehör  
Accessories

3 x D

5 x D

6 x D

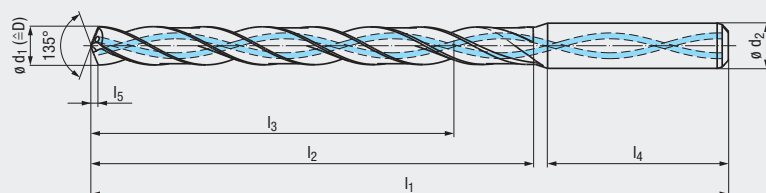
8 x D

12 x D

2-3,5 x D

# 12x D

Extra lange Ausführung  
Extra longong design



Eine Vorzentrierung durch den Einsatz eines Vorbohrers (z.B. NC SpotDrill) wird empfohlen  
Preparatory centering with a centering drill (p.ex. NC SpotDrill) is recommended

Bohrtiefe  
Drill depth

12 x D

Einsatzgebiete – Material  
Applications – material

» 14

P 1.1-4.1 M 1.1  
K 1.1, 2.1-3.2 H 1.1

| Ø d <sub>1</sub><br>k7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | Ø d <sub>2</sub><br>h6 | SteelDrill<br>SD104-12xD | HA |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|--------------------------|----|
| 6,00                   | M7                    |                                    | 116            | 78             | 70             | 36             | 1,1            | 6                      | TA233344.0600            |    |
| 6,10                   | MJ7x1                 |                                    | 146            | 108            | 94             | 36             | 1,1            | 8                      | TA233344.0610            |    |
| 6,20                   | M7x0,75               |                                    | 146            | 108            | 94             | 36             | 1,1            | 8                      | TA233344.0620            |    |
| 6,30                   |                       |                                    | 146            | 108            | 94             | 36             | 1,2            | 8                      | TA233344.0630            |    |
| 6,35                   | MJ7x0,75              |                                    | 146            | 108            | 94             | 36             | 1,2            | 8                      | TA233344.0635            |    |
| 6,50                   | M7x0,5                |                                    | 146            | 108            | 94             | 36             | 1,2            | 8                      | TA233344.0650            |    |
| 6,53                   |                       |                                    | 146            | 108            | 94             | 36             | 1,2            | 8                      | TA233344.0653            |    |
| 6,75                   |                       |                                    | 146            | 108            | 94             | 36             | 1,2            | 8                      | TA233344.0675            |    |
| 6,80                   | M8 / G1/16            | M7x0,5                             | 146            | 108            | 94             | 36             | 1,2            | 8                      | TA233344.0680            |    |
| 7,00                   | M8x1                  |                                    | 146            | 108            | 94             | 36             | 1,3            | 8                      | TA233344.0700            |    |
| 7,15                   |                       |                                    | 146            | 108            | 94             | 36             | 1,3            | 8                      | TA233344.0715            |    |
| 7,20                   | M8x0,75               |                                    | 146            | 108            | 94             | 36             | 1,3            | 8                      | TA233344.0720            |    |
| 7,30                   |                       | 5/16-18                            | 146            | 108            | 94             | 36             | 1,3            | 8                      | TA233344.0730            |    |
| 7,50                   | M8x0,5                |                                    | 146            | 108            | 94             | 36             | 1,4            | 8                      | TA233344.0750            |    |
| 7,54                   |                       |                                    | 146            | 108            | 94             | 36             | 1,4            | 8                      | TA233344.0754            |    |
| 7,80                   | M9                    | M8x0,5                             | 146            | 108            | 94             | 36             | 1,4            | 8                      | TA233344.0780            |    |
| 7,90                   | MJ9x1,25              |                                    | 146            | 108            | 94             | 36             | 1,4            | 8                      | TA233344.0790            |    |
| 7,94                   |                       |                                    | 146            | 108            | 94             | 36             | 1,4            | 8                      | TA233344.0794            |    |
| 8,00                   | M9x1 / 3/8-16         |                                    | 146            | 108            | 94             | 36             | 1,5            | 8                      | TA233344.0800            |    |
| 8,10                   | MJ9x1                 |                                    | 162            | 120            | 110            | 40             | 1,5            | 10                     | TA233344.0810            |    |
| 8,30                   |                       |                                    | 162            | 120            | 110            | 40             | 1,5            | 10                     | TA233344.0830            |    |
| 8,33                   |                       |                                    | 162            | 120            | 110            | 40             | 1,5            | 10                     | TA233344.0833            |    |
| 8,50                   | M10 / M9x0,5 / 3/8-24 |                                    | 162            | 120            | 110            | 40             | 1,6            | 10                     | TA233344.0850            |    |
| 8,60                   | MJ10x1,5              | M9x1                               | 162            | 120            | 110            | 40             | 1,6            | 10                     | TA233344.0860            |    |
| 8,70                   |                       | M9x0,75                            | 162            | 120            | 110            | 40             | 1,6            | 10                     | TA233344.0870            |    |
| 8,73                   |                       |                                    | 162            | 120            | 110            | 40             | 1,6            | 10                     | TA233344.0873            |    |
| 8,80                   | M10x1,25 / G1/8       | M9x0,5 / 3/8-16                    | 162            | 120            | 110            | 40             | 1,6            | 10                     | TA233344.0880            |    |
| 9,00                   | M10x1                 | 3/8-24 (GAL)                       | 162            | 120            | 110            | 40             | 1,6            | 10                     | TA233344.0900            |    |
| 9,10                   | MJ10x1                |                                    | 162            | 120            | 110            | 40             | 1,7            | 10                     | TA233344.0910            |    |
| 9,13                   |                       |                                    | 162            | 120            | 110            | 40             | 1,7            | 10                     | TA233344.0913            |    |
| 9,40                   | 7/16-14               | M10x1,25 (GAL)                     | 162            | 120            | 110            | 40             | 1,7            | 10                     | TA233344.0940            |    |
| 9,50                   | M11 / M10x0,5         |                                    | 162            | 120            | 110            | 40             | 1,7            | 10                     | TA233344.0950            |    |
| 9,53                   |                       |                                    | 162            | 120            | 110            | 40             | 1,7            | 10                     | TA233344.0953            |    |
| 9,60                   | MJ10x0,5 / MJ11x1,5   | M10x1                              | 162            | 120            | 110            | 40             | 1,8            | 10                     | TA233344.0960            |    |
| 9,70                   |                       | M10x0,75                           | 162            | 120            | 110            | 40             | 1,8            | 10                     | TA233344.0970            |    |
| 9,80                   |                       | M10x0,5                            | 162            | 120            | 110            | 40             | 1,8            | 10                     | TA233344.0980            |    |
| 9,90                   | MJ11x1,25 / 7/16-20   |                                    | 162            | 120            | 110            | 40             | 1,8            | 10                     | TA233344.0990            |    |
| 9,92                   |                       |                                    | 162            | 120            | 110            | 40             | 1,8            | 10                     | TA233344.0992            |    |

Ø 10,00 mm - Ø 14,00 mm →

EMUGE  
FRANKEN

### SteelDrill-SD104

VHM  
Carbide

TIALN

R30

Z2



4FF



140°



IT9-IT11

DIN 6535



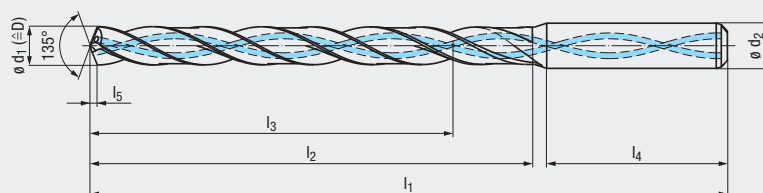
HA

STEEL  
Steel  
materials



## 12 x D

Extra lange Ausführung  
Extra long design



Eine Vorzentrierung durch den Einsatz eines Vorbohrers (z.B. NC SpotDrill) wird empfohlen  
Preparatory centering with a centering drill (p.ex. NC SpotDrill) is recommended

Bohrtiefe  
Drill depth

## 12 x D

Einsatzgebiete – Material  
Applications – material

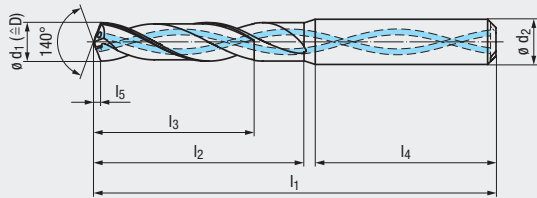
» 14

P 1.1-4.1 M 1.1  
K 1.1, 2.1-3.2 H 1.1

| $\emptyset d_1$<br>k7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps |       |       |       |       |       | $\emptyset d_2$<br>h6 | SteelDrill<br>SD104-12xD |  |
|-----------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-----------------------|--------------------------|--|
|                       |                       |                                    | $l_1$ | $l_2$ | $l_3$ | $l_4$ | $l_5$ |                       | HA                       |  |
| 10,00                 | M11x1                 |                                    | 162   | 120   | 110   | 40    | 1,8   | 10                    | TA233344.1000            |  |
| 10,10                 | MJ11x1                |                                    | 204   | 156   | 142   | 45    | 1,8   | 12                    | TA233344.1010            |  |
| 10,20                 | M12 / M11x0,75        | 7/16-14 (GAL)                      | 204   | 156   | 142   | 45    | 1,9   | 12                    | TA233344.1020            |  |
| 10,32                 |                       |                                    | 204   | 156   | 142   | 45    | 1,9   | 12                    | TA233344.1032            |  |
| 10,50                 | M12x1,5               | 7/16-20 (GAL)                      | 204   | 156   | 142   | 45    | 1,9   | 12                    | TA233344.1050            |  |
| 10,72                 |                       |                                    | 204   | 156   | 142   | 45    | 2,0   | 12                    | TA233344.1072            |  |
| 11,00                 | M12x1                 |                                    | 204   | 156   | 142   | 45    | 2,0   | 12                    | TA233344.1100            |  |
| 11,11                 |                       |                                    | 204   | 156   | 142   | 45    | 2,0   | 12                    | TA233344.1111            |  |
| 11,50                 | 1/2-20                |                                    | 204   | 156   | 142   | 45    | 2,1   | 12                    | TA233344.1150            |  |
| 11,51                 |                       |                                    | 204   | 156   | 142   | 45    | 2,1   | 12                    | TA233344.1151            |  |
| 11,91                 |                       |                                    | 204   | 156   | 142   | 45    | 2,2   | 12                    | TA233344.1191            |  |
| 12,00                 | M14                   |                                    | 204   | 156   | 142   | 45    | 2,2   | 12                    | TA233344.1200            |  |
| 12,30                 |                       |                                    | 230   | 182   | 166   | 45    | 2,2   | 14                    | TA233344.1230            |  |
| 12,50                 | M14x1,5               | G1/4 (GAL)                         | 230   | 182   | 166   | 45    | 2,3   | 14                    | TA233344.1250            |  |
| 12,70                 |                       | M13x0,75                           | 230   | 182   | 166   | 45    | 2,3   | 14                    | TA233344.1270            |  |
| 13,00                 | M14x1                 |                                    | 230   | 182   | 166   | 45    | 2,4   | 14                    | TA233344.1300            |  |
| 13,49                 |                       |                                    | 230   | 182   | 166   | 45    | 2,5   | 14                    | TA233344.1349            |  |
| 13,50                 | 5/8-11                |                                    | 230   | 182   | 166   | 45    | 2,5   | 14                    | TA233344.1350            |  |
| 13,89                 |                       |                                    | 230   | 182   | 166   | 45    | 2,5   | 14                    | TA233344.1389            |  |
| 14,00                 | M16 / M15x1           |                                    | 230   | 182   | 166   | 45    | 2,6   | 14                    | TA233344.1400            |  |

◀ 3,00 mm -  $\emptyset$  9,92 mm

## InoxDrill-ID103

3x D Kurze Ausführung  
Short designVHM  
Carbide

ALCR

DIN  
6537 K

R30

Z2

2FF

140°

IT9-IT10

DIN 6535

HA  
HEINOX  
Stainless steel  
materialsBohrtiefe  
Drill depthEinsatzgebiete – Material  
Applications – material

» 14

3 x D

|   |         |   |         |
|---|---------|---|---------|
| M | 1.1-4.1 | N | 1.1-2.3 |
| S | 1.2-1.3 | S | 2.2-2.3 |

| Ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps   | Gewindeformer<br>Cold-forming taps | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | Ø d <sub>2</sub><br>h6 | InoxDrill<br>ID103-3xD<br>HA | InoxDrill<br>ID103-3xD<br>HE |
|------------------------|-------------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|------------------------------|------------------------------|
| 3,00                   | M3,5x0,5 / MJ3,5x0,6    |                                    | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201724.0300                | TA501724.0300                |
| 3,10                   |                         |                                    | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201724.0310                | TA501724.0310                |
| 3,15                   | M3,5x0,35               | #6-32                              | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201724.0315                | TA501724.0315                |
| 3,18                   |                         |                                    | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201724.0318                | TA501724.0318                |
| 3,20                   | MJ3,5x0,35              |                                    | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201724.0320                | TA501724.0320                |
| 3,22                   |                         | #6-40                              | 62             | 20             | 14             | 36             | 0,5            | 6                      | TA201724.0322                | TA501724.0322                |
| 3,25                   |                         | M3,5                               | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201724.0325                | TA501724.0325                |
| 3,30                   | M4                      | M3,5x0,5                           | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201724.0330                | TA501724.0330                |
| 3,35                   |                         |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201724.0335                | TA501724.0335                |
| 3,38                   |                         | M3,5x0,35                          | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201724.0338                | TA501724.0338                |
| 3,40                   | MJ4x0,7                 |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201724.0340                | TA501724.0340                |
| 3,50                   | M4x0,5 / #8-32 / #8-36  |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201724.0350                | TA501724.0350                |
| 3,55                   |                         |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201724.0355                | TA501724.0355                |
| 3,57                   |                         |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201724.0357                | TA501724.0357                |
| 3,60                   | MJ4x0,5                 |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201724.0360                | TA501724.0360                |
| 3,65                   | M4x0,35                 |                                    | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201724.0365                | TA501724.0365                |
| 3,70                   | M4,5                    | M4                                 | 62             | 20             | 14             | 36             | 0,6            | 6                      | TA201724.0370                | TA501724.0370                |
| 3,80                   |                         | M4x0,5 / #8-32                     | 66             | 24             | 17             | 36             | 0,6            | 6                      | TA201724.0380                | TA501724.0380                |
| 3,85                   |                         | #8-36                              | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201724.0385                | TA501724.0385                |
| 3,88                   |                         | M4x0,35                            | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201724.0388                | TA501724.0388                |
| 3,90                   | MJ4,5x0,75 / #10-24     |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201724.0390                | TA501724.0390                |
| 3,97                   |                         |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201724.0397                | TA501724.0397                |
| 4,00                   |                         |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201724.0400                | TA501724.0400                |
| 4,04                   |                         |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201724.0404                | TA501724.0404                |
| 4,10                   | MJ4,5x0,5 / #10-32      |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201724.0410                | TA501724.0410                |
| 4,15                   | M5x0,9                  |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201724.0415                | TA501724.0415                |
| 4,20                   | M5 / M5x0,75            | M4,5                               | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201724.0420                | TA501724.0420                |
| 4,30                   | MJ5x0,8                 | M4,5x0,5 / #10-24 (GAL)            | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201724.0430                | TA501724.0430                |
| 4,35                   |                         | #10-24                             | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201724.0435                | TA501724.0435                |
| 4,37                   |                         |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201724.0437                | TA501724.0437                |
| 4,40                   |                         |                                    | 66             | 24             | 17             | 36             | 0,7            | 6                      | TA201724.0440                | TA501724.0440                |
| 4,45                   |                         | #10-32                             | 66             | 24             | 17             | 36             | 0,8            | 6                      | TA201724.0445                | TA501724.0445                |
| 4,50                   | M5x0,5 / #12-24         |                                    | 66             | 24             | 17             | 36             | 0,8            | 6                      | TA201724.0450                | TA501724.0450                |
| 4,60                   | M5,5 / MJ5x0,5 / #12-28 |                                    | 66             | 24             | 17             | 36             | 0,8            | 6                      | TA201724.0460                | TA501724.0460                |
| 4,65                   |                         | M5                                 | 66             | 24             | 17             | 36             | 0,8            | 6                      | TA201724.0465                | TA501724.0465                |
| 4,70                   |                         | M5x0,75                            | 66             | 24             | 17             | 36             | 0,8            | 6                      | TA201724.0470                | TA501724.0470                |
| 4,76                   |                         |                                    | 66             | 28             | 20             | 36             | 0,8            | 6                      | TA201724.0476                | TA501724.0476                |
| 4,80                   |                         | M5x0,5                             | 66             | 28             | 20             | 36             | 0,8            | 6                      | TA201724.0480                | TA501724.0480                |
| 4,90                   |                         |                                    | 66             | 28             | 20             | 36             | 0,8            | 6                      | TA201724.0490                | TA501724.0490                |
| 5,00                   | M6                      | #12-24                             | 66             | 28             | 20             | 36             | 0,8            | 6                      | TA201724.0500                | TA501724.0500                |
| 5,10                   | MJ6x1 / 1/4-20          | M5,5 / #12-28                      | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201724.0510                | TA501724.0510                |
| 5,11                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201724.0511                | TA501724.0511                |
| 5,16                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201724.0516                | TA501724.0516                |
| 5,20                   | M6x0,75                 |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201724.0520                | TA501724.0520                |
| 5,25                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201724.0525                | TA501724.0525                |
| 5,30                   |                         | M5,5x0,5                           | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201724.0530                | TA501724.0530                |
| 5,40                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201724.0540                | TA501724.0540                |
| 5,41                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201724.0541                | TA501724.0541                |
| 5,50                   | M6x0,5 / 1/4-28         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201724.0550                | TA501724.0550                |
| 5,55                   |                         | M6 (GAL)                           | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201724.0555                | TA501724.0555                |
| 5,56                   |                         |                                    | 66             | 28             | 20             | 36             | 0,9            | 6                      | TA201724.0556                | TA501724.0556                |
| 5,60                   | MJ6x0,5                 | M6                                 | 66             | 28             | 20             | 36             | 1,0            | 6                      | TA201724.0560                | TA501724.0560                |

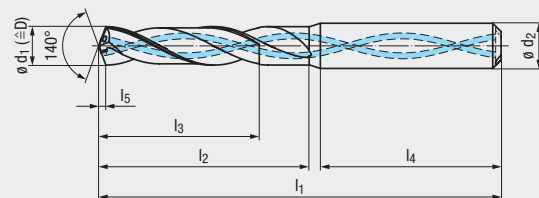
Ø 5,70 mm - Ø 20,00 mm →



### InoxDrill-ID103

## 3 x D

Kurze Ausführung  
Short design



VHM  
Carbide

ALCR

DIN  
6537 K

R30



DIN 6535



INOX  
Stainless steel  
materials



## 3 x D

M 1.1-4.1  
S 1.2-1.3

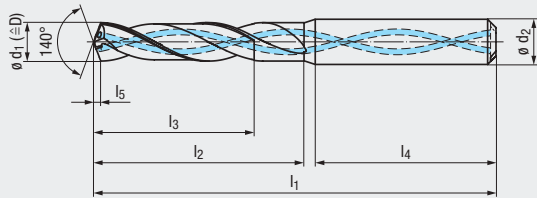
N 1.1-2.3  
S 2.2-2.3

Einsatzgebiete – Material  
Applications – material

» 14

| $\emptyset d_1$<br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps |                |                |                |                |                | $\emptyset d_2$<br>h6 | InoxDrill<br>ID103-3xD | InoxDrill<br>ID103-3xD |
|-----------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|-----------------------|------------------------|------------------------|
|                       |                       |                                    | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> |                       | HA                     | HE                     |
| 5,70                  |                       | M6x0,75 / 1/4-20 (GAL)             | 66             | 28             | 20             | 36             | 1,0            | 6                     | TA201724.0570          | TA501724.0570          |
| 5,75                  |                       | 1/4-20                             | 66             | 28             | 20             | 36             | 1,0            | 6                     | TA201724.0575          | TA501724.0575          |
| 5,80                  |                       | M6x0,5                             | 66             | 28             | 20             | 36             | 1,0            | 6                     | TA201724.0580          | TA501724.0580          |
| 5,90                  |                       |                                    | 66             | 28             | 20             | 36             | 1,0            | 6                     | TA201724.0590          | TA501724.0590          |
| 5,95                  |                       | 1/4-28                             | 66             | 28             | 20             | 36             | 1,0            | 6                     | TA201724.0595          | TA501724.0595          |
| 6,00                  | M7                    |                                    | 66             | 28             | 20             | 36             | 1,0            | 6                     | TA201724.0600          | TA501724.0600          |
| 6,10                  | MJ7x1                 |                                    | 79             | 34             | 24             | 36             | 1,0            | 8                     | TA201724.0610          | TA501724.0610          |
| 6,20                  | M7x0,75               |                                    | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201724.0620          | TA501724.0620          |
| 6,30                  |                       |                                    | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201724.0630          | TA501724.0630          |
| 6,35                  | MJ7x0,75              |                                    | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201724.0635          | TA501724.0635          |
| 6,40                  |                       |                                    | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201724.0640          | TA501724.0640          |
| 6,50                  | M7x0,5                |                                    | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201724.0650          | TA501724.0650          |
| 6,53                  |                       |                                    | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201724.0653          | TA501724.0653          |
| 6,60                  | 5/16-18               | M7                                 | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201724.0660          | TA501724.0660          |
| 6,70                  |                       | M7x0,75                            | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201724.0670          | TA501724.0670          |
| 6,75                  |                       |                                    | 79             | 34             | 24             | 36             | 1,1            | 8                     | TA201724.0675          | TA501724.0675          |
| 6,80                  | M8 / G1/16            | M7x0,5                             | 79             | 34             | 24             | 36             | 1,2            | 8                     | TA201724.0680          | TA501724.0680          |
| 6,90                  | MJ8x1,25 / 5/16-24    |                                    | 79             | 34             | 24             | 36             | 1,2            | 8                     | TA201724.0690          | TA501724.0690          |
| 7,00                  | M8x1                  |                                    | 79             | 34             | 24             | 36             | 1,2            | 8                     | TA201724.0700          | TA501724.0700          |
| 7,10                  | MJ8x1                 |                                    | 79             | 41             | 29             | 36             | 1,2            | 8                     | TA201724.0710          | TA501724.0710          |
| 7,15                  |                       |                                    | 79             | 41             | 29             | 36             | 1,2            | 8                     | TA201724.0715          | TA501724.0715          |
| 7,20                  | M8x0,75               |                                    | 79             | 41             | 29             | 36             | 1,2            | 8                     | TA201724.0720          | TA501724.0720          |
| 7,25                  |                       | 5/16-18 (GAL) / G1/16              | 79             | 41             | 29             | 36             | 1,2            | 8                     | TA201724.0725          | TA501724.0725          |
| 7,30                  |                       | 5/16-18                            | 79             | 41             | 29             | 36             | 1,2            | 8                     | TA201724.0730          | TA501724.0730          |
| 7,40                  |                       | M8 (GAL) / 5/16-24 (GAL)           | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201724.0740          | TA501724.0740          |
| 7,45                  |                       | M8 / 5/16-24                       | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201724.0745          | TA501724.0745          |
| 7,50                  | M8x0,5                |                                    | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201724.0750          | TA501724.0750          |
| 7,54                  |                       |                                    | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201724.0754          | TA501724.0754          |
| 7,60                  |                       | M8x1                               | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201724.0760          | TA501724.0760          |
| 7,70                  |                       | M8x0,75                            | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201724.0770          | TA501724.0770          |
| 7,80                  | M9                    | M8x0,5                             | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201724.0780          | TA501724.0780          |
| 7,90                  | MJ9x1,25              |                                    | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201724.0790          | TA501724.0790          |
| 7,94                  |                       |                                    | 79             | 41             | 29             | 36             | 1,3            | 8                     | TA201724.0794          | TA501724.0794          |
| 8,00                  | M9x1 / 3/8-16         |                                    | 79             | 41             | 29             | 36             | 1,4            | 8                     | TA201724.0800          | TA501724.0800          |
| 8,10                  | MJ9x1                 |                                    | 89             | 47             | 35             | 40             | 1,4            | 10                    | TA201724.0810          | TA501724.0810          |
| 8,20                  | M9x0,75               |                                    | 89             | 47             | 35             | 40             | 1,4            | 10                    | TA201724.0820          | TA501724.0820          |
| 8,30                  |                       |                                    | 89             | 47             | 35             | 40             | 1,4            | 10                    | TA201724.0830          | TA501724.0830          |
| 8,33                  |                       |                                    | 89             | 47             | 35             | 40             | 1,4            | 10                    | TA201724.0833          | TA501724.0833          |
| 8,40                  |                       | M9 (GAL)                           | 89             | 47             | 35             | 40             | 1,4            | 10                    | TA201724.0840          | TA501724.0840          |
| 8,45                  |                       | M9                                 | 89             | 47             | 35             | 40             | 1,4            | 10                    | TA201724.0845          | TA501724.0845          |
| 8,50                  | M10 / M9x0,5 / 3/8-24 |                                    | 89             | 47             | 35             | 40             | 1,4            | 10                    | TA201724.0850          | TA501724.0850          |
| 8,60                  | MJ10x1,5              | M9x1                               | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201724.0860          | TA501724.0860          |
| 8,70                  |                       | M9x0,75                            | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201724.0870          | TA501724.0870          |
| 8,73                  |                       |                                    | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201724.0873          | TA501724.0873          |
| 8,80                  | M10x1,25 / G1/8       | M9x0,5 / 3/8-16                    | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201724.0880          | TA501724.0880          |
| 8,90                  | MJ10x1,25             |                                    | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201724.0890          | TA501724.0890          |
| 9,00                  | M10x1                 | 3/8-24 (GAL)                       | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201724.0900          | TA501724.0900          |
| 9,05                  |                       | 3/8-24                             | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201724.0905          | TA501724.0905          |
| 9,10                  | MJ10x1                |                                    | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201724.0910          | TA501724.0910          |
| 9,13                  |                       |                                    | 89             | 47             | 35             | 40             | 1,5            | 10                    | TA201724.0913          | TA501724.0913          |
| 9,20                  | M10x0,75              |                                    | 89             | 47             | 35             | 40             | 1,6            | 10                    | TA201724.0920          | TA501724.0920          |
| 9,30                  |                       | M10 (GAL)                          | 89             | 47             | 35             | 40             | 1,6            | 10                    | TA201724.0930          | TA501724.0930          |

## InoxDrill-ID103

3x D Kurze Ausführung  
Short designVHM  
Carbide

ALCR

DIN  
6537 K

R30

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140°



DIN 6535

INOX  
Stainless steel  
materialsBohrtiefe  
Drill depthEinsatzgebiete – Material  
Applications – material

» 14

3 x D

|   |         |   |         |
|---|---------|---|---------|
| M | 1.1-4.1 | N | 1.1-2.3 |
| S | 1.2-1.3 | S | 2.2-2.3 |

| ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps |                |                |                |                |                |    | ø d <sub>2</sub><br>h6 | InoxDrill<br>ID103-3xD | InoxDrill<br>ID103-3xD |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|----|------------------------|------------------------|------------------------|
|                        |                       |                                    | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | HA |                        | HE                     |                        |
| 9,35                   | MJ10x0,75             | M10                                | 89             | 47             | 35             | 40             | 1,6            | 10 | TA201724.0935          | TA501724.0935          |                        |
| 9,40                   | 7/16-14               | M10x1,25 (GAL)                     | 89             | 47             | 35             | 40             | 1,6            | 10 | TA201724.0940          | TA501724.0940          |                        |
| 9,45                   |                       | M10x1,25                           | 89             | 47             | 35             | 40             | 1,6            | 10 | TA201724.0945          | TA501724.0945          |                        |
| 9,50                   | M11 / M10x0,5         |                                    | 89             | 47             | 35             | 40             | 1,6            | 10 | TA201724.0950          | TA501724.0950          |                        |
| 9,53                   |                       |                                    | 89             | 47             | 35             | 40             | 1,6            | 10 | TA201724.0953          | TA501724.0953          |                        |
| 9,60                   | MJ10x0,5 / MJ11x1,5   | M10x1                              | 89             | 47             | 35             | 40             | 1,6            | 10 | TA201724.0960          | TA501724.0960          |                        |
| 9,70                   |                       | M10x0,75                           | 89             | 47             | 35             | 40             | 1,6            | 10 | TA201724.0970          | TA501724.0970          |                        |
| 9,80                   |                       | M10x0,5                            | 89             | 47             | 35             | 40             | 1,7            | 10 | TA201724.0980          | TA501724.0980          |                        |
| 9,90                   | MJ11x1,25 / 7/16-20   |                                    | 89             | 47             | 35             | 40             | 1,7            | 10 | TA201724.0990          | TA501724.0990          |                        |
| 9,92                   |                       |                                    | 89             | 47             | 35             | 40             | 1,7            | 10 | TA201724.0992          | TA501724.0992          |                        |
| 10,00                  | M11x1                 |                                    | 89             | 47             | 35             | 40             | 1,7            | 10 | TA201724.1000          | TA501724.1000          |                        |
| 10,10                  | MJ11x1                |                                    | 102            | 55             | 40             | 45             | 1,7            | 12 | TA201724.1010          | TA501724.1010          |                        |
| 10,20                  | M12 / M11x0,75        | 7/16-14 (GAL)                      | 102            | 55             | 40             | 45             | 1,7            | 12 | TA201724.1020          | TA501724.1020          |                        |
| 10,25                  |                       | 7/16-14                            | 102            | 55             | 40             | 45             | 1,7            | 12 | TA201724.1025          | TA501724.1025          |                        |
| 10,30                  |                       | M11 (GAL)                          | 102            | 55             | 40             | 45             | 1,7            | 12 | TA201724.1030          | TA501724.1030          |                        |
| 10,32                  |                       |                                    | 102            | 55             | 40             | 45             | 1,8            | 12 | TA201724.1032          | TA501724.1032          |                        |
| 10,35                  | MJ11x0,75             | M11                                | 102            | 55             | 40             | 45             | 1,8            | 12 | TA201724.1035          | TA501724.1035          |                        |
| 10,40                  |                       |                                    | 102            | 55             | 40             | 45             | 1,8            | 12 | TA201724.1040          | TA501724.1040          |                        |
| 10,50                  | M12x1,5               | 7/16-20 (GAL)                      | 102            | 55             | 40             | 45             | 1,8            | 12 | TA201724.1050          | TA501724.1050          |                        |
| 10,55                  |                       | M11x1 (GAL) / 7/16-20              | 102            | 55             | 40             | 45             | 1,8            | 12 | TA201724.1055          | TA501724.1055          |                        |
| 10,60                  | MJ12x1,5              | M11x1                              | 102            | 55             | 40             | 45             | 1,8            | 12 | TA201724.1060          | TA501724.1060          |                        |
| 10,70                  |                       | M11x0,75                           | 102            | 55             | 40             | 45             | 1,8            | 12 | TA201724.1070          | TA501724.1070          |                        |
| 10,72                  |                       |                                    | 102            | 55             | 40             | 45             | 1,8            | 12 | TA201724.1072          | TA501724.1072          |                        |
| 10,80                  | M12x1,25 / 1/2-13     |                                    | 102            | 55             | 40             | 45             | 1,8            | 12 | TA201724.1080          | TA501724.1080          |                        |
| 10,90                  | MJ12x1,25             |                                    | 102            | 55             | 40             | 45             | 1,8            | 12 | TA201724.1090          | TA501724.1090          |                        |
| 11,00                  | M12x1                 |                                    | 102            | 55             | 40             | 45             | 1,9            | 12 | TA201724.1100          | TA501724.1100          |                        |
| 11,10                  | MJ12x1                |                                    | 102            | 55             | 40             | 45             | 1,9            | 12 | TA201724.1110          | TA501724.1110          |                        |
| 11,11                  |                       |                                    | 102            | 55             | 40             | 45             | 1,9            | 12 | TA201724.1111          | TA501724.1111          |                        |
| 11,20                  | M12x0,75              | M12 (GAL)                          | 102            | 55             | 40             | 45             | 1,9            | 12 | TA201724.1120          | TA501724.1120          |                        |
| 11,25                  |                       | M12                                | 102            | 55             | 40             | 45             | 1,9            | 12 | TA201724.1125          | TA501724.1125          |                        |
| 11,30                  |                       | M12x1,5 (GAL)                      | 102            | 55             | 40             | 45             | 1,9            | 12 | TA201724.1130          | TA501724.1130          |                        |
| 11,35                  |                       | M12x1,5                            | 102            | 55             | 40             | 45             | 1,9            | 12 | TA201724.1135          | TA501724.1135          |                        |
| 11,40                  |                       | M12x1,25 (GAL)                     | 102            | 55             | 40             | 45             | 1,9            | 12 | TA201724.1140          | TA501724.1140          |                        |
| 11,45                  |                       | M12x1,25                           | 102            | 55             | 40             | 45             | 1,9            | 12 | TA201724.1145          | TA501724.1145          |                        |
| 11,50                  | 1/2-20                |                                    | 102            | 55             | 40             | 45             | 2,0            | 12 | TA201724.1150          | TA501724.1150          |                        |
| 11,51                  |                       |                                    | 102            | 55             | 40             | 45             | 2,0            | 12 | TA201724.1151          | TA501724.1151          |                        |
| 11,60                  |                       | M12x1                              | 102            | 55             | 40             | 45             | 2,0            | 12 | TA201724.1160          | TA501724.1160          |                        |
| 11,70                  |                       | M12x0,75                           | 102            | 55             | 40             | 45             | 2,0            | 12 | TA201724.1170          | TA501724.1170          |                        |
| 11,80                  | G1/4                  | 1/2-13                             | 102            | 55             | 40             | 45             | 2,0            | 12 | TA201724.1180          | TA501724.1180          |                        |
| 11,90                  |                       |                                    | 102            | 55             | 40             | 45             | 2,0            | 12 | TA201724.1190          | TA501724.1190          |                        |
| 11,91                  |                       |                                    | 102            | 55             | 40             | 45             | 2,0            | 12 | TA201724.1191          | TA501724.1191          |                        |
| 12,00                  | M14                   |                                    | 102            | 55             | 40             | 45             | 2,0            | 12 | TA201724.1200          | TA501724.1200          |                        |
| 12,10                  | MJ13x1                | 1/2-20 (GAL)                       | 107            | 60             | 43             | 45             | 2,1            | 14 | TA201724.1210          | TA501724.1210          |                        |
| 12,15                  |                       | 1/2-20                             | 107            | 60             | 43             | 45             | 2,1            | 14 | TA201724.1215          | TA501724.1215          |                        |
| 12,20                  | 9/16-12               |                                    | 107            | 60             | 43             | 45             | 2,1            | 14 | TA201724.1220          | TA501724.1220          |                        |
| 12,30                  |                       |                                    | 107            | 60             | 43             | 45             | 2,1            | 14 | TA201724.1230          | TA501724.1230          |                        |
| 12,50                  | M14x1,5               | G1/4 (GAL)                         | 107            | 60             | 43             | 45             | 2,1            | 14 | TA201724.1250          | TA501724.1250          |                        |
| 12,55                  |                       | M13x1 (GAL) / G1/4                 | 107            | 60             | 43             | 45             | 2,1            | 14 | TA201724.1255          | TA501724.1255          |                        |
| 12,60                  | MJ14x1,5              | M13x1                              | 107            | 60             | 43             | 45             | 2,1            | 14 | TA201724.1260          | TA501724.1260          |                        |
| 12,70                  |                       | M13x0,75                           | 107            | 60             | 43             | 45             | 2,2            | 14 | TA201724.1270          | TA501724.1270          |                        |
| 12,80                  | M14x1,25              |                                    | 107            | 60             | 43             | 45             | 2,2            | 14 | TA201724.1280          | TA501724.1280          |                        |
| 12,90                  | MJ14x1,25 / 9/16-18   |                                    | 107            | 60             | 43             | 45             | 2,2            | 14 | TA201724.1290          | TA501724.1290          |                        |

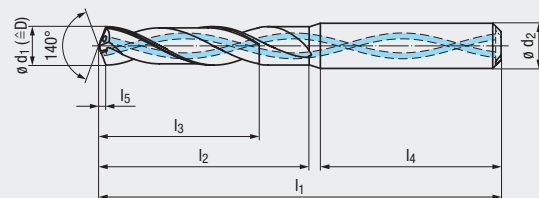
ø 13,00 mm - ø 20,00 mm →

EMUGE  
FRANKEN

### InoxDrill-ID103

## 3 x D

Kurze Ausführung  
Short design



VHM  
Carbide

ALCR

DIN  
6537 K

R30



DIN 6535



INOX  
Stainless steel  
materials



## 3 x D

M 1.1-4.1  
S 1.2-1.3

N 1.1-2.3  
S 2.2-2.3

Einsatzgebiete – Material  
Applications – material

» 14

| $\emptyset d_1$<br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps |       |       |       |       |       |       | $\emptyset d_2$<br>h6 | InoxDrill<br>ID103-3xD | InoxDrill<br>ID103-3xD |
|-----------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-------|-----------------------|------------------------|------------------------|
|                       |                       |                                    | $l_1$ | $l_2$ | $l_3$ | $l_4$ | $l_5$ | $l_6$ |                       | HA                     | HE                     |
| 13,00                 | M14x1                 |                                    | 107   | 60    | 43    | 45    | 2,2   | 14    |                       | TA201724.1300          | TA501724.1300          |
| 13,10                 | MJ14x1                | M14                                | 107   | 60    | 43    | 45    | 2,2   | 14    |                       | TA201724.1310          | TA501724.1310          |
| 13,20                 | M14x0,75              |                                    | 107   | 60    | 43    | 45    | 2,2   | 14    |                       | TA201724.1320          | TA501724.1320          |
| 13,30                 |                       | 9/16-12                            | 107   | 60    | 43    | 45    | 2,3   | 14    |                       | TA201724.1330          | TA501724.1330          |
| 13,35                 |                       | M14x1,5                            | 107   | 60    | 43    | 45    | 2,3   | 14    |                       | TA201724.1335          | TA501724.1335          |
| 13,45                 |                       | M14x1,25                           | 107   | 60    | 43    | 45    | 2,3   | 14    |                       | TA201724.1345          | TA501724.1345          |
| 13,49                 |                       |                                    | 107   | 60    | 43    | 45    | 2,3   | 14    |                       | TA201724.1349          | TA501724.1349          |
| 13,50                 | 5/8-11                |                                    | 107   | 60    | 43    | 45    | 2,3   | 14    |                       | TA201724.1350          | TA501724.1350          |
| 13,60                 | MJ15x1,5              | M14x1 / 9/16-18 (GAL)              | 107   | 60    | 43    | 45    | 2,3   | 14    |                       | TA201724.1360          | TA501724.1360          |
| 13,65                 |                       | 9/16-18                            | 107   | 60    | 43    | 45    | 2,3   | 14    |                       | TA201724.1365          | TA501724.1365          |
| 13,70                 |                       | M14x0,75                           | 107   | 60    | 43    | 45    | 2,3   | 14    |                       | TA201724.1370          | TA501724.1370          |
| 13,80                 |                       |                                    | 107   | 60    | 43    | 45    | 2,3   | 14    |                       | TA201724.1380          | TA501724.1380          |
| 13,89                 |                       |                                    | 107   | 60    | 43    | 45    | 2,4   | 14    |                       | TA201724.1389          | TA501724.1389          |
| 14,00                 | M16 / M15x1           |                                    | 107   | 60    | 43    | 45    | 2,4   | 14    |                       | TA201724.1400          | TA501724.1400          |
| 14,10                 | MJ15x1                |                                    | 115   | 65    | 45    | 48    | 2,4   | 16    |                       | TA201724.1410          | TA501724.1410          |
| 14,20                 | M15x0,75              |                                    | 115   | 65    | 45    | 48    | 2,4   | 16    |                       | TA201724.1420          | TA501724.1420          |
| 14,29                 |                       |                                    | 115   | 65    | 45    | 48    | 2,4   | 16    |                       | TA201724.1429          | TA501724.1429          |
| 14,30                 |                       |                                    | 115   | 65    | 45    | 48    | 2,4   | 16    |                       | TA201724.1430          | TA501724.1430          |
| 14,40                 |                       |                                    | 115   | 65    | 45    | 48    | 2,4   | 16    |                       | TA201724.1440          | TA501724.1440          |
| 14,50                 | M16x1,5 / 5/8-18      |                                    | 115   | 65    | 45    | 48    | 2,5   | 16    |                       | TA201724.1450          | TA501724.1450          |
| 14,60                 | MJ16x1,5              | M15x1                              | 115   | 65    | 45    | 48    | 2,5   | 16    |                       | TA201724.1460          | TA501724.1460          |
| 14,68                 |                       |                                    | 115   | 65    | 45    | 48    | 2,5   | 16    |                       | TA201724.1468          | TA501724.1468          |
| 14,70                 |                       | M15x0,75                           | 115   | 65    | 45    | 48    | 2,5   | 16    |                       | TA201724.1470          | TA501724.1470          |
| 14,80                 |                       | 5/8-11                             | 115   | 65    | 45    | 48    | 2,5   | 16    |                       | TA201724.1480          | TA501724.1480          |
| 15,00                 | M16x1                 |                                    | 115   | 65    | 45    | 48    | 2,5   | 16    |                       | TA201724.1500          | TA501724.1500          |
| 15,08                 |                       |                                    | 115   | 65    | 45    | 48    | 2,6   | 16    |                       | TA201724.1508          | TA501724.1508          |
| 15,10                 | MJ16x1                | M16                                | 115   | 65    | 45    | 48    | 2,6   | 16    |                       | TA201724.1510          | TA501724.1510          |
| 15,20                 | M16x0,75              | 5/8-18 (GAL)                       | 115   | 65    | 45    | 48    | 2,6   | 16    |                       | TA201724.1520          | TA501724.1520          |
| 15,25                 | G3/8                  | 5/8-18                             | 115   | 65    | 45    | 48    | 2,6   | 16    |                       | TA201724.1525          | TA501724.1525          |
| 15,35                 |                       | M16x1,5                            | 115   | 65    | 45    | 48    | 2,6   | 16    |                       | TA201724.1535          | TA501724.1535          |
| 15,50                 | M18                   |                                    | 115   | 65    | 45    | 48    | 2,6   | 16    |                       | TA201724.1550          | TA501724.1550          |
| 15,60                 |                       | M16x1                              | 115   | 65    | 45    | 48    | 2,6   | 16    |                       | TA201724.1560          | TA501724.1560          |
| 15,80                 | MJ18x2,5              |                                    | 115   | 65    | 45    | 48    | 2,7   | 16    |                       | TA201724.1580          | TA501724.1580          |
| 15,88                 |                       |                                    | 115   | 65    | 45    | 48    | 2,7   | 16    |                       | TA201724.1588          | TA501724.1588          |
| 16,00                 | M18x2                 |                                    | 115   | 65    | 45    | 48    | 2,7   | 16    |                       | TA201724.1600          | TA501724.1600          |
| 16,27                 |                       |                                    | 123   | 73    | 51    | 48    | 2,8   | 18    |                       | TA201724.1627          | TA501724.1627          |
| 16,50                 | M18x1,5 / 3/4-10      |                                    | 123   | 73    | 51    | 48    | 2,8   | 18    |                       | TA201724.1650          | TA501724.1650          |
| 16,67                 |                       |                                    | 123   | 73    | 51    | 48    | 2,8   | 18    |                       | TA201724.1667          | TA501724.1667          |
| 17,00                 | M18x1                 |                                    | 123   | 73    | 51    | 48    | 2,9   | 18    |                       | TA201724.1700          | TA501724.1700          |
| 17,46                 |                       |                                    | 123   | 73    | 51    | 48    | 3,0   | 18    |                       | TA201724.1746          | TA501724.1746          |
| 17,50                 | M20 / 3/4-16          |                                    | 123   | 73    | 51    | 48    | 3,0   | 18    |                       | TA201724.1750          | TA501724.1750          |
| 17,60                 |                       | M18x1                              | 123   | 73    | 51    | 48    | 3,0   | 18    |                       | TA201724.1760          | TA501724.1760          |
| 18,00                 | M20x2                 |                                    | 123   | 73    | 51    | 48    | 3,1   | 18    |                       | TA201724.1800          | TA501724.1800          |
| 18,50                 | M20x1,5               |                                    | 131   | 79    | 55    | 50    | 3,1   | 20    |                       | TA201724.1850          | TA501724.1850          |
| 18,85                 |                       | M20                                | 131   | 79    | 55    | 50    | 3,2   | 20    |                       | TA201724.1885          | TA501724.1885          |
| 19,00                 | M20x1 / G1/2          |                                    | 131   | 79    | 55    | 50    | 3,2   | 20    |                       | TA201724.1900          | TA501724.1900          |
| 19,05                 |                       |                                    | 131   | 79    | 55    | 50    | 3,2   | 20    |                       | TA201724.1905          | TA501724.1905          |
| 19,35                 |                       | M20x1,5                            | 131   | 79    | 55    | 50    | 3,3   | 20    |                       | TA201724.1935          | TA501724.1935          |
| 19,50                 | M22 / 7/8-9           |                                    | 131   | 79    | 55    | 50    | 3,3   | 20    |                       | TA201724.1950          | TA501724.1950          |
| 19,60                 |                       | M20x1                              | 131   | 79    | 55    | 50    | 3,3   | 20    |                       | TA201724.1960          | TA501724.1960          |
| 20,00                 | M22x2                 |                                    | 131   | 79    | 55    | 50    | 3,4   | 20    |                       | TA201724.2000          | TA501724.2000          |

## InoxDrill-ID103

VHM  
Carbide

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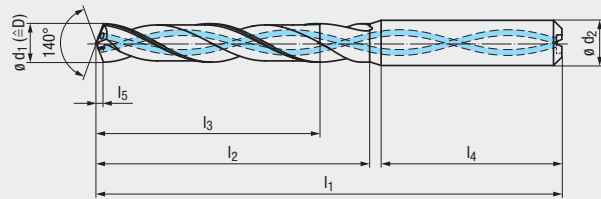
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140°

IT9-IT10

DIN 6535

INOX  
Stainless steel  
materials5 x D Lange Ausführung  
Long designBohrtiefe  
Drill depthEinsatzgebiete – Material  
Applications – material

» 14

5 x D

|   |         |   |         |
|---|---------|---|---------|
| M | 1.1-4.1 | N | 1.1-2.3 |
| S | 1.2-1.3 | S | 2.2-2.3 |

| ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps   | Gewindeformer<br>Cold-forming taps |                |                |                |                |                |                        | InoxDrill<br>ID103-5xD | InoxDrill<br>ID103-5xD |
|------------------------|-------------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|------------------------|------------------------|
|                        |                         |                                    | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | ø d <sub>2</sub><br>h6 | HA                     | HE                     |
| 3,00                   | M3,5x0,5 / MJ3,5x0,6    |                                    | 66             | 28             | 23             | 36             | 0,5            | 6                      | TA211724.0300          | TA511724.0300          |
| 3,10                   |                         |                                    | 66             | 28             | 23             | 36             | 0,5            | 6                      | TA211724.0310          | TA511724.0310          |
| 3,15                   | M3,5x0,35               | #6-32                              | 66             | 28             | 23             | 36             | 0,5            | 6                      | TA211724.0315          | TA511724.0315          |
| 3,18                   |                         |                                    | 66             | 28             | 23             | 36             | 0,5            | 6                      | TA211724.0318          | TA511724.0318          |
| 3,20                   | MJ3,5x0,35              |                                    | 66             | 28             | 23             | 36             | 0,5            | 6                      | TA211724.0320          | TA511724.0320          |
| 3,22                   |                         | #6-40                              | 66             | 28             | 23             | 36             | 0,5            | 6                      | TA211724.0322          | TA511724.0322          |
| 3,25                   |                         | M3,5                               | 66             | 28             | 23             | 36             | 0,6            | 6                      | TA211724.0325          | TA511724.0325          |
| 3,30                   | M4                      | M3,5x0,5                           | 66             | 28             | 23             | 36             | 0,6            | 6                      | TA211724.0330          | TA511724.0330          |
| 3,35                   |                         |                                    | 66             | 28             | 23             | 36             | 0,6            | 6                      | TA211724.0335          | TA511724.0335          |
| 3,38                   |                         | M3,5x0,35                          | 66             | 28             | 23             | 36             | 0,6            | 6                      | TA211724.0338          | TA511724.0338          |
| 3,40                   | MJ4x0,7                 |                                    | 66             | 28             | 23             | 36             | 0,6            | 6                      | TA211724.0340          | TA511724.0340          |
| 3,50                   | M4x0,5 / #8-32 / #8-36  |                                    | 66             | 28             | 23             | 36             | 0,6            | 6                      | TA211724.0350          | TA511724.0350          |
| 3,55                   |                         |                                    | 66             | 28             | 23             | 36             | 0,6            | 6                      | TA211724.0355          | TA511724.0355          |
| 3,57                   |                         |                                    | 66             | 28             | 23             | 36             | 0,6            | 6                      | TA211724.0357          | TA511724.0357          |
| 3,60                   | MJ4x0,5                 |                                    | 66             | 28             | 23             | 36             | 0,6            | 6                      | TA211724.0360          | TA511724.0360          |
| 3,65                   | M4x0,35                 |                                    | 66             | 28             | 23             | 36             | 0,6            | 6                      | TA211724.0365          | TA511724.0365          |
| 3,70                   | M4,5                    | M4                                 | 66             | 28             | 23             | 36             | 0,6            | 6                      | TA211724.0370          | TA511724.0370          |
| 3,80                   |                         | M4x0,5 / #8-32                     | 74             | 36             | 29             | 36             | 0,6            | 6                      | TA211724.0380          | TA511724.0380          |
| 3,85                   |                         | #8-36                              | 74             | 36             | 29             | 36             | 0,7            | 6                      | TA211724.0385          | TA511724.0385          |
| 3,88                   |                         | M4x0,35                            | 74             | 36             | 29             | 36             | 0,7            | 6                      | TA211724.0388          | TA511724.0388          |
| 3,90                   | MJ4,5x0,75 / #10-24     |                                    | 74             | 36             | 29             | 36             | 0,7            | 6                      | TA211724.0390          | TA511724.0390          |
| 3,97                   |                         |                                    | 74             | 36             | 29             | 36             | 0,7            | 6                      | TA211724.0397          | TA511724.0397          |
| 4,00                   |                         |                                    | 74             | 36             | 29             | 36             | 0,7            | 6                      | TA211724.0400          | TA511724.0400          |
| 4,04                   |                         |                                    | 74             | 36             | 29             | 36             | 0,7            | 6                      | TA211724.0404          | TA511724.0404          |
| 4,10                   | MJ4,5x0,5 / #10-32      |                                    | 74             | 36             | 29             | 36             | 0,7            | 6                      | TA211724.0410          | TA511724.0410          |
| 4,15                   | M5x0,9                  |                                    | 74             | 36             | 29             | 36             | 0,7            | 6                      | TA211724.0415          | TA511724.0415          |
| 4,20                   | M5 / M5x0,75            | M4,5                               | 74             | 36             | 29             | 36             | 0,7            | 6                      | TA211724.0420          | TA511724.0420          |
| 4,30                   | MJ5x0,8                 | M4,5x0,5 / #10-24 (GAL)            | 74             | 36             | 29             | 36             | 0,7            | 6                      | TA211724.0430          | TA511724.0430          |
| 4,35                   |                         | #10-24                             | 74             | 36             | 29             | 36             | 0,7            | 6                      | TA211724.0435          | TA511724.0435          |
| 4,37                   |                         |                                    | 74             | 36             | 29             | 36             | 0,7            | 6                      | TA211724.0437          | TA511724.0437          |
| 4,40                   |                         |                                    | 74             | 36             | 29             | 36             | 0,7            | 6                      | TA211724.0440          | TA511724.0440          |
| 4,45                   |                         | #10-32                             | 74             | 36             | 29             | 36             | 0,8            | 6                      | TA211724.0445          | TA511724.0445          |
| 4,50                   | M5x0,5 / #12-24         |                                    | 74             | 36             | 29             | 36             | 0,8            | 6                      | TA211724.0450          | TA511724.0450          |
| 4,60                   | M5,5 / MJ5x0,5 / #12-28 |                                    | 74             | 36             | 29             | 36             | 0,8            | 6                      | TA211724.0460          | TA511724.0460          |
| 4,65                   |                         | M5                                 | 74             | 36             | 29             | 36             | 0,8            | 6                      | TA211724.0465          | TA511724.0465          |
| 4,70                   |                         | M5x0,75                            | 74             | 36             | 29             | 36             | 0,8            | 6                      | TA211724.0470          | TA511724.0470          |
| 4,76                   |                         |                                    | 82             | 44             | 35             | 36             | 0,8            | 6                      | TA211724.0476          | TA511724.0476          |
| 4,80                   |                         | M5x0,5                             | 82             | 44             | 35             | 36             | 0,8            | 6                      | TA211724.0480          | TA511724.0480          |
| 4,90                   |                         |                                    | 82             | 44             | 35             | 36             | 0,8            | 6                      | TA211724.0490          | TA511724.0490          |
| 5,00                   | M6                      | #12-24                             | 82             | 44             | 35             | 36             | 0,8            | 6                      | TA211724.0500          | TA511724.0500          |
| 5,10                   | MJ6x1 / 1/4-20          | M5,5 / #12-28                      | 82             | 44             | 35             | 36             | 0,9            | 6                      | TA211724.0510          | TA511724.0510          |
| 5,11                   |                         |                                    | 82             | 44             | 35             | 36             | 0,9            | 6                      | TA211724.0511          | TA511724.0511          |
| 5,16                   |                         |                                    | 82             | 44             | 35             | 36             | 0,9            | 6                      | TA211724.0516          | TA511724.0516          |
| 5,20                   | M6x0,75                 |                                    | 82             | 44             | 35             | 36             | 0,9            | 6                      | TA211724.0520          | TA511724.0520          |
| 5,25                   |                         |                                    | 82             | 44             | 35             | 36             | 0,9            | 6                      | TA211724.0525          | TA511724.0525          |
| 5,30                   |                         | M5,5x0,5                           | 82             | 44             | 35             | 36             | 0,9            | 6                      | TA211724.0530          | TA511724.0530          |
| 5,40                   |                         |                                    | 82             | 44             | 35             | 36             | 0,9            | 6                      | TA211724.0540          | TA511724.0540          |
| 5,41                   |                         |                                    | 82             | 44             | 35             | 36             | 0,9            | 6                      | TA211724.0541          | TA511724.0541          |
| 5,50                   | M6x0,5 / 1/4-28         |                                    | 82             | 44             | 35             | 36             | 0,9            | 6                      | TA211724.0550          | TA511724.0550          |

ø 5,55 mm - ø 20,00 mm →

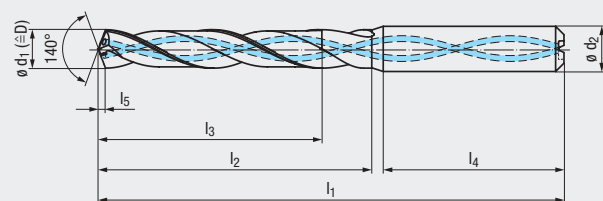




- Product Finder
- $v_c / f$
- BASIC
- STEEL
- INOX
- GG
- HCUT
- SpotDrill
- Zubehör Accessories
- 3 x D
- 5 x D
- 6 x D
- 8 x D
- 12 x D
- 2-3,5 x D

### InoxDrill-ID103

**5 x D** Lange Ausführung  
Long design



VHM  
Carbide

ALCR

DIN  
6537 L

R30



DIN 6535



INOX  
Stainless steel  
materials



**5 x D**

M 1.1-4.1 N 1.1-2.3  
S 1.2-1.3 S 2.2-2.3

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material

» 14

| $\emptyset d_1$<br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps |       |       |       |       |       | $\emptyset d_2$<br>h6 | InoxDrill<br>ID103-5xD<br>HA | InoxDrill<br>ID103-5xD<br>HE |
|-----------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-----------------------|------------------------------|------------------------------|
|                       |                       |                                    | $l_1$ | $l_2$ | $l_3$ | $l_4$ | $l_5$ |                       |                              |                              |
| 5,55                  |                       | M6 (GAL)                           | 82    | 44    | 35    | 36    | 0,9   | 6                     | TA211724.0555                | TA511724.0555                |
| 5,56                  |                       |                                    | 82    | 44    | 35    | 36    | 0,9   | 6                     | TA211724.0556                | TA511724.0556                |
| 5,60                  | MJ6x0,5               | M6                                 | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211724.0560                | TA511724.0560                |
| 5,70                  |                       | M6x0,75 / 1/4-20 (GAL)             | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211724.0570                | TA511724.0570                |
| 5,75                  |                       | 1/4-20                             | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211724.0575                | TA511724.0575                |
| 5,80                  |                       | M6x0,5                             | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211724.0580                | TA511724.0580                |
| 5,90                  |                       |                                    | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211724.0590                | TA511724.0590                |
| 5,95                  |                       | 1/4-28                             | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211724.0595                | TA511724.0595                |
| 6,00                  | M7                    |                                    | 82    | 44    | 35    | 36    | 1,0   | 6                     | TA211724.0600                | TA511724.0600                |
| 6,10                  | MJ7x1                 |                                    | 91    | 53    | 43    | 36    | 1,0   | 8                     | TA211724.0610                | TA511724.0610                |
| 6,20                  | M7x0,75               |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211724.0620                | TA511724.0620                |
| 6,30                  |                       |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211724.0630                | TA511724.0630                |
| 6,35                  | MJ7x0,75              |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211724.0635                | TA511724.0635                |
| 6,40                  |                       |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211724.0640                | TA511724.0640                |
| 6,50                  | M7x0,5                |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211724.0650                | TA511724.0650                |
| 6,53                  |                       |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211724.0653                | TA511724.0653                |
| 6,60                  | 5/16-18               | M7                                 | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211724.0660                | TA511724.0660                |
| 6,70                  |                       | M7x0,75                            | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211724.0670                | TA511724.0670                |
| 6,75                  |                       |                                    | 91    | 53    | 43    | 36    | 1,1   | 8                     | TA211724.0675                | TA511724.0675                |
| 6,80                  | M8 / G1/16            | M7x0,5                             | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211724.0680                | TA511724.0680                |
| 6,90                  | MJ8x1,25 / 5/16-24    |                                    | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211724.0690                | TA511724.0690                |
| 7,00                  | M8x1                  |                                    | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211724.0700                | TA511724.0700                |
| 7,10                  | MJ8x1                 |                                    | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211724.0710                | TA511724.0710                |
| 7,15                  |                       |                                    | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211724.0715                | TA511724.0715                |
| 7,20                  | M8x0,75               |                                    | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211724.0720                | TA511724.0720                |
| 7,25                  |                       | 5/16-18 (GAL) / G1/16              | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211724.0725                | TA511724.0725                |
| 7,30                  |                       | 5/16-18                            | 91    | 53    | 43    | 36    | 1,2   | 8                     | TA211724.0730                | TA511724.0730                |
| 7,40                  |                       | M8 (GAL) / 5/16-24 (GAL)           | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211724.0740                | TA511724.0740                |
| 7,45                  |                       | M8 / 5/16-24                       | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211724.0745                | TA511724.0745                |
| 7,50                  | M8x0,5                |                                    | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211724.0750                | TA511724.0750                |
| 7,54                  |                       |                                    | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211724.0754                | TA511724.0754                |
| 7,60                  |                       | M8x1                               | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211724.0760                | TA511724.0760                |
| 7,70                  |                       | M8x0,75                            | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211724.0770                | TA511724.0770                |
| 7,80                  | M9                    | M8x0,5                             | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211724.0780                | TA511724.0780                |
| 7,90                  | MJ9x1,25              |                                    | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211724.0790                | TA511724.0790                |
| 7,94                  |                       |                                    | 91    | 53    | 43    | 36    | 1,3   | 8                     | TA211724.0794                | TA511724.0794                |
| 8,00                  | M9x1 / 3/8-16         |                                    | 91    | 53    | 43    | 36    | 1,4   | 8                     | TA211724.0800                | TA511724.0800                |
| 8,10                  | MJ9x1                 |                                    | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211724.0810                | TA511724.0810                |
| 8,20                  | M9x0,75               |                                    | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211724.0820                | TA511724.0820                |
| 8,30                  |                       |                                    | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211724.0830                | TA511724.0830                |
| 8,33                  |                       |                                    | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211724.0833                | TA511724.0833                |
| 8,40                  |                       | M9 (GAL)                           | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211724.0840                | TA511724.0840                |
| 8,45                  |                       | M9                                 | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211724.0845                | TA511724.0845                |
| 8,50                  | M10 / M9x0,5 / 3/8-24 |                                    | 103   | 61    | 49    | 40    | 1,4   | 10                    | TA211724.0850                | TA511724.0850                |
| 8,60                  | MJ10x1,5              | M9x1                               | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211724.0860                | TA511724.0860                |
| 8,70                  |                       | M9x0,75                            | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211724.0870                | TA511724.0870                |
| 8,73                  |                       |                                    | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211724.0873                | TA511724.0873                |
| 8,80                  | M10x1,25 / G1/8       | M9x0,5 / 3/8-16                    | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211724.0880                | TA511724.0880                |
| 8,90                  | MJ10x1,25             |                                    | 103   | 61    | 49    | 40    | 1,5   | 10                    | TA211724.0890                | TA511724.0890                |



## InoxDrill-ID103

VHM  
Carbide

ALCR

DIN  
6537 L

R30

Z2

2FF

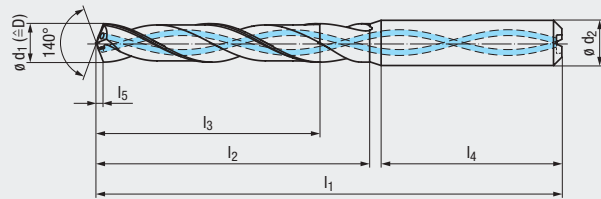


140°



IT9-IT10

DIN 6535

HA  
HEINOX  
Stainless steel  
materials5 x D Lange Ausführung  
Long designBohrtiefe  
Drill depthEinsatzgebiete – Material  
Applications – material

» 14

5 x D

|   |         |   |         |
|---|---------|---|---------|
| M | 1.1-4.1 | N | 1.1-2.3 |
| S | 1.2-1.3 | S | 2.2-2.3 |

| ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps                                                              | Gewindeformer<br>Cold-forming taps                                                 |                |                |                |                |                |    | ø d <sub>2</sub><br>h6 | InoxDrill<br>ID103-5xD | InoxDrill<br>ID103-5xD |
|------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----|------------------------|------------------------|------------------------|
|                        |  |  | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | HA |                        | HE                     |                        |
| 9,00                   | M10x1                                                                              | 3/8-24 (GAL)                                                                       | 103            | 61             | 49             | 40             | 1,5            | 10 | TA211724.0900          | TA511724.0900          |                        |
| 9,05                   |                                                                                    | 3/8-24                                                                             | 103            | 61             | 49             | 40             | 1,5            | 10 | TA211724.0905          | TA511724.0905          |                        |
| 9,10                   | MJ10x1                                                                             |                                                                                    | 103            | 61             | 49             | 40             | 1,5            | 10 | TA211724.0910          | TA511724.0910          |                        |
| 9,13                   |                                                                                    |                                                                                    | 103            | 61             | 49             | 40             | 1,5            | 10 | TA211724.0913          | TA511724.0913          |                        |
| 9,20                   | M10x0,75                                                                           |                                                                                    | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211724.0920          | TA511724.0920          |                        |
| 9,30                   |                                                                                    | M10 (GAL)                                                                          | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211724.0930          | TA511724.0930          |                        |
| 9,35                   | MJ10x0,75                                                                          | M10                                                                                | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211724.0935          | TA511724.0935          |                        |
| 9,40                   | 7/16-14                                                                            | M10x1,25 (GAL)                                                                     | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211724.0940          | TA511724.0940          |                        |
| 9,45                   |                                                                                    | M10x1,25                                                                           | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211724.0945          | TA511724.0945          |                        |
| 9,50                   | M11 / M10x0,5                                                                      |                                                                                    | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211724.0950          | TA511724.0950          |                        |
| 9,53                   |                                                                                    |                                                                                    | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211724.0953          | TA511724.0953          |                        |
| 9,60                   | MJ10x0,5 / MJ11x1,5                                                                | M10x1                                                                              | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211724.0960          | TA511724.0960          |                        |
| 9,70                   |                                                                                    | M10x0,75                                                                           | 103            | 61             | 49             | 40             | 1,6            | 10 | TA211724.0970          | TA511724.0970          |                        |
| 9,80                   |                                                                                    | M10x0,5                                                                            | 103            | 61             | 49             | 40             | 1,7            | 10 | TA211724.0980          | TA511724.0980          |                        |
| 9,90                   | MJ11x1,25 / 7/16-20                                                                |                                                                                    | 103            | 61             | 49             | 40             | 1,7            | 10 | TA211724.0990          | TA511724.0990          |                        |
| 9,92                   |                                                                                    |                                                                                    | 103            | 61             | 49             | 40             | 1,7            | 10 | TA211724.0992          | TA511724.0992          |                        |
| 10,00                  | M11x1                                                                              |                                                                                    | 103            | 61             | 49             | 40             | 1,7            | 10 | TA211724.1000          | TA511724.1000          |                        |
| 10,10                  | MJ11x1                                                                             |                                                                                    | 118            | 71             | 56             | 45             | 1,7            | 12 | TA211724.1010          | TA511724.1010          |                        |
| 10,20                  | M12 / M11x0,75                                                                     | 7/16-14 (GAL)                                                                      | 118            | 71             | 56             | 45             | 1,7            | 12 | TA211724.1020          | TA511724.1020          |                        |
| 10,25                  |                                                                                    | 7/16-14                                                                            | 118            | 71             | 56             | 45             | 1,7            | 12 | TA211724.1025          | TA511724.1025          |                        |
| 10,30                  |                                                                                    | M11 (GAL)                                                                          | 118            | 71             | 56             | 45             | 1,7            | 12 | TA211724.1030          | TA511724.1030          |                        |
| 10,32                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211724.1032          | TA511724.1032          |                        |
| 10,35                  | MJ11x0,75                                                                          | M11                                                                                | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211724.1035          | TA511724.1035          |                        |
| 10,40                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211724.1040          | TA511724.1040          |                        |
| 10,50                  | M12x1,5                                                                            | 7/16-20 (GAL)                                                                      | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211724.1050          | TA511724.1050          |                        |
| 10,55                  |                                                                                    | M11x1 (GAL) / 7/16-20                                                              | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211724.1055          | TA511724.1055          |                        |
| 10,60                  | MJ12x1,5                                                                           | M11x1                                                                              | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211724.1060          | TA511724.1060          |                        |
| 10,70                  |                                                                                    | M11x0,75                                                                           | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211724.1070          | TA511724.1070          |                        |
| 10,72                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211724.1072          | TA511724.1072          |                        |
| 10,80                  | M12x1,25 / 1/2-13                                                                  |                                                                                    | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211724.1080          | TA511724.1080          |                        |
| 10,90                  | MJ12x1,25                                                                          |                                                                                    | 118            | 71             | 56             | 45             | 1,8            | 12 | TA211724.1090          | TA511724.1090          |                        |
| 11,00                  | M12x1                                                                              |                                                                                    | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211724.1100          | TA511724.1100          |                        |
| 11,10                  | MJ12x1                                                                             |                                                                                    | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211724.1110          | TA511724.1110          |                        |
| 11,11                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211724.1111          | TA511724.1111          |                        |
| 11,20                  | M12x0,75                                                                           | M12 (GAL)                                                                          | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211724.1120          | TA511724.1120          |                        |
| 11,25                  |                                                                                    | M12                                                                                | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211724.1125          | TA511724.1125          |                        |
| 11,30                  |                                                                                    | M12x1,5 (GAL)                                                                      | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211724.1130          | TA511724.1130          |                        |
| 11,35                  |                                                                                    | M12x1,5                                                                            | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211724.1135          | TA511724.1135          |                        |
| 11,40                  |                                                                                    | M12x1,25 (GAL)                                                                     | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211724.1140          | TA511724.1140          |                        |
| 11,45                  |                                                                                    | M12x1,25                                                                           | 118            | 71             | 56             | 45             | 1,9            | 12 | TA211724.1145          | TA511724.1145          |                        |
| 11,50                  | 1/2-20                                                                             |                                                                                    | 118            | 71             | 56             | 45             | 2,0            | 12 | TA211724.1150          | TA511724.1150          |                        |
| 11,51                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 2,0            | 12 | TA211724.1151          | TA511724.1151          |                        |
| 11,60                  |                                                                                    | M12x1                                                                              | 118            | 71             | 56             | 45             | 2,0            | 12 | TA211724.1160          | TA511724.1160          |                        |
| 11,70                  |                                                                                    | M12x0,75                                                                           | 118            | 71             | 56             | 45             | 2,0            | 12 | TA211724.1170          | TA511724.1170          |                        |
| 11,80                  | G1/4                                                                               | 1/2-13                                                                             | 118            | 71             | 56             | 45             | 2,0            | 12 | TA211724.1180          | TA511724.1180          |                        |
| 11,90                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 2,0            | 12 | TA211724.1190          | TA511724.1190          |                        |
| 11,91                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 2,0            | 12 | TA211724.1191          | TA511724.1191          |                        |
| 12,00                  | M14                                                                                |                                                                                    | 118            | 71             | 56             | 45             | 2,0            | 12 | TA211724.1200          | TA511724.1200          |                        |
| 12,10                  | MJ13x1                                                                             | 1/2-20 (GAL)                                                                       | 124            | 77             | 60             | 45             | 2,1            | 14 | TA211724.1210          | TA511724.1210          |                        |

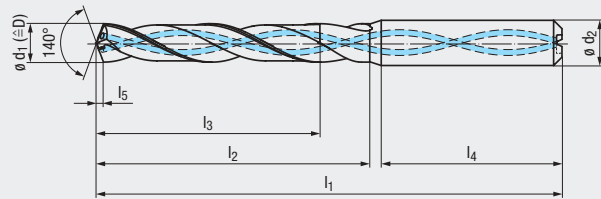
ø 12,15 mm - ø 20,00 mm →



- Product Finder
- $v_c / f$
- BASIC
- STEEL
- INOX
- GG
- HCUT
- SpotDrill
- Zubehör  
Accessories
- 3 x D
- 5 x D
- 6 x D
- 8 x D
- 12 x D
- 2-3,5 x D

### InoxDrill-ID103

**5 x D** Lange Ausführung  
Long design



VHM  
Carbide

ALCR

DIN  
6537 L

R30



DIN 6535



INOX  
Stainless steel  
materials



**5 x D**

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material



M 1.1-4.1 N 1.1-2.3  
S 1.2-1.3 S 2.2-2.3

| Ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps |                |                |                |                |                | Ø d <sub>2</sub><br>h6 | InoxDrill<br>ID103-5xD<br>HA | InoxDrill<br>ID103-5xD<br>HE |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|------------------------------|------------------------------|
|                        |                       |                                    | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> |                        |                              |                              |
| 12,15                  |                       | 1/2-20                             | 124            | 77             | 60             | 45             | 2,1            | 14                     | TA211724.1215                | TA511724.1215                |
| 12,20                  | 9/16-12               |                                    | 124            | 77             | 60             | 45             | 2,1            | 14                     | TA211724.1220                | TA511724.1220                |
| 12,30                  |                       |                                    | 124            | 77             | 60             | 45             | 2,1            | 14                     | TA211724.1230                | TA511724.1230                |
| 12,50                  | M14x1,5               | G1/4 (GAL)                         | 124            | 77             | 60             | 45             | 2,1            | 14                     | TA211724.1250                | TA511724.1250                |
| 12,55                  |                       | M13x1 (GAL) / G1/4                 | 124            | 77             | 60             | 45             | 2,1            | 14                     | TA211724.1255                | TA511724.1255                |
| 12,60                  | MJ14x1,5              | M13x1                              | 124            | 77             | 60             | 45             | 2,1            | 14                     | TA211724.1260                | TA511724.1260                |
| 12,70                  |                       | M13x0,75                           | 124            | 77             | 60             | 45             | 2,2            | 14                     | TA211724.1270                | TA511724.1270                |
| 12,80                  | M14x1,25              |                                    | 124            | 77             | 60             | 45             | 2,2            | 14                     | TA211724.1280                | TA511724.1280                |
| 12,90                  | MJ14x1,25 / 9/16-18   |                                    | 124            | 77             | 60             | 45             | 2,2            | 14                     | TA211724.1290                | TA511724.1290                |
| 13,00                  | M14x1                 |                                    | 124            | 77             | 60             | 45             | 2,2            | 14                     | TA211724.1300                | TA511724.1300                |
| 13,10                  | MJ14x1                | M14                                | 124            | 77             | 60             | 45             | 2,2            | 14                     | TA211724.1310                | TA511724.1310                |
| 13,20                  | M14x0,75              |                                    | 124            | 77             | 60             | 45             | 2,2            | 14                     | TA211724.1320                | TA511724.1320                |
| 13,30                  |                       | 9/16-12                            | 124            | 77             | 60             | 45             | 2,3            | 14                     | TA211724.1330                | TA511724.1330                |
| 13,35                  |                       | M14x1,5                            | 124            | 77             | 60             | 45             | 2,3            | 14                     | TA211724.1335                | TA511724.1335                |
| 13,45                  |                       | M14x1,25                           | 124            | 77             | 60             | 45             | 2,3            | 14                     | TA211724.1345                | TA511724.1345                |
| 13,49                  |                       |                                    | 124            | 77             | 60             | 45             | 2,3            | 14                     | TA211724.1349                | TA511724.1349                |
| 13,50                  | 5/8-11                |                                    | 124            | 77             | 60             | 45             | 2,3            | 14                     | TA211724.1350                | TA511724.1350                |
| 13,60                  | MJ15x1,5              | M14x1 / 9/16-18 (GAL)              | 124            | 77             | 60             | 45             | 2,3            | 14                     | TA211724.1360                | TA511724.1360                |
| 13,65                  |                       | 9/16-18                            | 124            | 77             | 60             | 45             | 2,3            | 14                     | TA211724.1365                | TA511724.1365                |
| 13,70                  |                       | M14x0,75                           | 124            | 77             | 60             | 45             | 2,3            | 14                     | TA211724.1370                | TA511724.1370                |
| 13,80                  |                       |                                    | 124            | 77             | 60             | 45             | 2,3            | 14                     | TA211724.1380                | TA511724.1380                |
| 13,89                  |                       |                                    | 124            | 77             | 60             | 45             | 2,4            | 14                     | TA211724.1389                | TA511724.1389                |
| 14,00                  | M16 / M15x1           |                                    | 124            | 77             | 60             | 45             | 2,4            | 14                     | TA211724.1400                | TA511724.1400                |
| 14,10                  | MJ15x1                |                                    | 133            | 83             | 63             | 48             | 2,4            | 16                     | TA211724.1410                | TA511724.1410                |
| 14,20                  | M15x0,75              |                                    | 133            | 83             | 63             | 48             | 2,4            | 16                     | TA211724.1420                | TA511724.1420                |
| 14,29                  |                       |                                    | 133            | 83             | 63             | 48             | 2,4            | 16                     | TA211724.1429                | TA511724.1429                |
| 14,30                  |                       |                                    | 133            | 83             | 63             | 48             | 2,4            | 16                     | TA211724.1430                | TA511724.1430                |
| 14,40                  |                       |                                    | 133            | 83             | 63             | 48             | 2,4            | 16                     | TA211724.1440                | TA511724.1440                |
| 14,50                  | M16x1,5 / 5/8-18      |                                    | 133            | 83             | 63             | 48             | 2,5            | 16                     | TA211724.1450                | TA511724.1450                |
| 14,60                  | MJ16x1,5              | M15x1                              | 133            | 83             | 63             | 48             | 2,5            | 16                     | TA211724.1460                | TA511724.1460                |
| 14,68                  |                       |                                    | 133            | 83             | 63             | 48             | 2,5            | 16                     | TA211724.1468                | TA511724.1468                |
| 14,70                  |                       | M15x0,75                           | 133            | 83             | 63             | 48             | 2,5            | 16                     | TA211724.1470                | TA511724.1470                |
| 14,80                  |                       | 5/8-11                             | 133            | 83             | 63             | 48             | 2,5            | 16                     | TA211724.1480                | TA511724.1480                |
| 15,00                  | M16x1                 |                                    | 133            | 83             | 63             | 48             | 2,5            | 16                     | TA211724.1500                | TA511724.1500                |
| 15,08                  |                       |                                    | 133            | 83             | 63             | 48             | 2,6            | 16                     | TA211724.1508                | TA511724.1508                |
| 15,10                  | MJ16x1                | M16                                | 133            | 83             | 63             | 48             | 2,6            | 16                     | TA211724.1510                | TA511724.1510                |
| 15,20                  | M16x0,75              | 5/8-18 (GAL)                       | 133            | 83             | 63             | 48             | 2,6            | 16                     | TA211724.1520                | TA511724.1520                |
| 15,25                  | G3/8                  | 5/8-18                             | 133            | 83             | 63             | 48             | 2,6            | 16                     | TA211724.1525                | TA511724.1525                |
| 15,35                  |                       | M16x1,5                            | 133            | 83             | 63             | 48             | 2,6            | 16                     | TA211724.1535                | TA511724.1535                |
| 15,50                  | M18                   |                                    | 133            | 83             | 63             | 48             | 2,6            | 16                     | TA211724.1550                | TA511724.1550                |
| 15,60                  |                       | M16x1                              | 133            | 83             | 63             | 48             | 2,6            | 16                     | TA211724.1560                | TA511724.1560                |
| 15,80                  | MJ18x2,5              |                                    | 133            | 83             | 63             | 48             | 2,7            | 16                     | TA211724.1580                | TA511724.1580                |
| 15,88                  |                       |                                    | 133            | 83             | 63             | 48             | 2,7            | 16                     | TA211724.1588                | TA511724.1588                |
| 16,00                  | M18x2                 |                                    | 133            | 83             | 63             | 48             | 2,7            | 16                     | TA211724.1600                | TA511724.1600                |
| 16,27                  |                       |                                    | 143            | 93             | 71             | 48             | 2,8            | 18                     | TA211724.1627                | TA511724.1627                |
| 16,50                  | M18x1,5 / 3/4-10      |                                    | 143            | 93             | 71             | 48             | 2,8            | 18                     | TA211724.1650                | TA511724.1650                |
| 16,67                  |                       |                                    | 143            | 93             | 71             | 48             | 2,8            | 18                     | TA211724.1667                | TA511724.1667                |
| 17,00                  | M18x1                 |                                    | 143            | 93             | 71             | 48             | 2,9            | 18                     | TA211724.1700                | TA511724.1700                |
| 17,46                  |                       |                                    | 143            | 93             | 71             | 48             | 3,0            | 18                     | TA211724.1746                | TA511724.1746                |

## InoxDrill-ID103

VHM  
Carbide

ALCR

DIN  
6537 L

R30

Z2

2FF

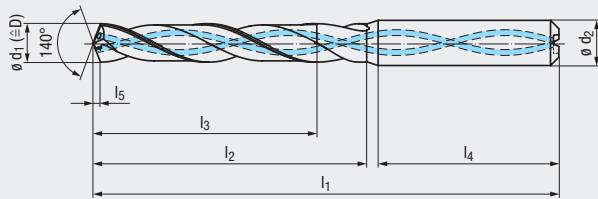


140°



IT9-IT10

DIN 6535

HA  
HE**5 x D** Lange Ausführung  
Long designINOX  
Stainless steel  
materialsProduct  
Finderv<sub>c</sub> / f

BASIC

STEEL

INOX

G

HCUT

SpotDrill

Zubehör  
Accessories

3 x D

5 x D

6 x D

8 x D

12 x D

2-3,5 x D

Bohrtiefe  
Drill depthEinsatzgebiete – Material  
Applications – material

» 14

**5 x D**M 1.1-4.1 N 1.1-2.3  
S 1.2-1.3 S 2.2-2.3

|                        | Gewindebohrer<br>Taps                                                              | Gewindeformer<br>Cold-forming taps                                                 |     |     |    |    |     |                        | InoxDrill<br>ID103-5xD | InoxDrill<br>ID103-5xD |
|------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----|-----|----|----|-----|------------------------|------------------------|------------------------|
| Ø d <sub>1</sub><br>m7 |  |  |     |     |    |    |     | Ø d <sub>2</sub><br>h6 | HA                     | HE                     |
| 17,50                  | M20 / 3/4-16                                                                       |                                                                                    | 143 | 93  | 71 | 48 | 3,0 | 18                     | TA211724.1750          | TA511724.1750          |
| 17,60                  |                                                                                    | M18x1                                                                              | 143 | 93  | 71 | 48 | 3,0 | 18                     | TA211724.1760          | TA511724.1760          |
| 18,00                  | M20x2                                                                              |                                                                                    | 143 | 93  | 71 | 48 | 3,1 | 18                     | TA211724.1800          | TA511724.1800          |
| 18,50                  | M20x1,5                                                                            |                                                                                    | 153 | 101 | 77 | 50 | 3,1 | 20                     | TA211724.1850          | TA511724.1850          |
| 18,85                  |                                                                                    | M20                                                                                | 153 | 101 | 77 | 50 | 3,2 | 20                     | TA211724.1885          | TA511724.1885          |
| 19,00                  | M20x1 / G1/2                                                                       |                                                                                    | 153 | 101 | 77 | 50 | 3,2 | 20                     | TA211724.1900          | TA511724.1900          |
| 19,05                  |                                                                                    |                                                                                    | 153 | 101 | 77 | 50 | 3,2 | 20                     | TA211724.1905          | TA511724.1905          |
| 19,35                  |                                                                                    | M20x1,5                                                                            | 153 | 101 | 77 | 50 | 3,3 | 20                     | TA211724.1935          | TA511724.1935          |
| 19,50                  | M22 / 7/8-9                                                                        |                                                                                    | 153 | 101 | 77 | 50 | 3,3 | 20                     | TA211724.1950          | TA511724.1950          |
| 19,60                  |                                                                                    | M20x1                                                                              | 153 | 101 | 77 | 50 | 3,3 | 20                     | TA211724.1960          | TA511724.1960          |
| 20,00                  | M22x2                                                                              |                                                                                    | 153 | 101 | 77 | 50 | 3,4 | 20                     | TA211724.2000          | TA511724.2000          |



Kühlschmierstoffe siehe Seite 300 - 301

Coolant-lubricants, see page 300 - 301

Product Finder

$v_c / f$

BASIC

STEEL

INOX

GG

HCUT

SpotDrill

Zubehör  
Accessories

3 x D

5 x D

6 x D

8 x D

12 x D

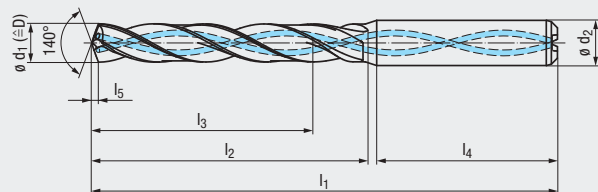
2-3,5 x D



### EF-Drill-GG

**Für die Bearbeitung von Gusswerkstoffen**  
For the machining of cast materials

**5 x D** Lange Ausführung  
Long design



VHM  
Carbide

TIALN

DIN  
6537 L

R30



DIN 6535



GG  
Cast iron



**5 x D**

K 1.1-4.2

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material

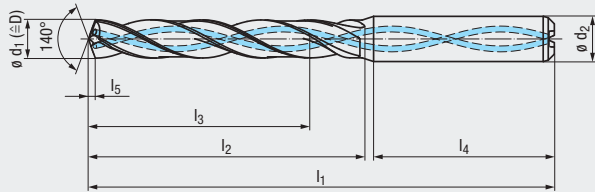
» 14

| ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps                                                              | Gewindeformer<br>Cold-forming taps                                                 |                |                |                |                |                | ø d <sub>2</sub><br>h6 | EF-Drill<br>GG-5xD | EF-Drill<br>GG-5xD |
|------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|--------------------|--------------------|
|                        |  |  | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> |                        | HA                 | HE                 |
| 2,80                   |                                                                                    | M3                                                                                 | 61             | 22             | 17             | 36             | 0,7            | 6                      | TA212444.0280      | TA512444.0280      |
| 2,85                   | #6-32                                                                              |                                                                                    | 61             | 22             | 17             | 36             | 0,7            | 6                      | TA212444.0285      | TA512444.0285      |
| 2,90                   | M3,5                                                                               | #5-40                                                                              | 61             | 22             | 17             | 36             | 0,8            | 6                      | TA212444.0290      | TA512444.0290      |
| 3,00                   | M3,5x0,5 / MJ3,5x0,6                                                               |                                                                                    | 66             | 28             | 23             | 36             | 0,8            | 6                      | TA212444.0300      | TA512444.0300      |
| 3,10                   |                                                                                    |                                                                                    | 66             | 28             | 23             | 36             | 0,8            | 6                      | TA212444.0310      | TA512444.0310      |
| 3,15                   | M3,5x0,35                                                                          | #6-32                                                                              | 66             | 28             | 23             | 36             | 0,8            | 6                      | TA212444.0315      | TA512444.0315      |
| 3,20                   | MJ3,5x0,35                                                                         |                                                                                    | 66             | 28             | 23             | 36             | 0,8            | 6                      | TA212444.0320      | TA512444.0320      |
| 3,25                   |                                                                                    | M3,5                                                                               | 66             | 28             | 23             | 36             | 0,8            | 6                      | TA212444.0325      | TA512444.0325      |
| 3,30                   | M4                                                                                 | M3,5x0,5                                                                           | 66             | 28             | 23             | 36             | 0,9            | 6                      | TA212444.0330      | TA512444.0330      |
| 3,35                   |                                                                                    |                                                                                    | 66             | 28             | 23             | 36             | 0,9            | 6                      | TA212444.0335      | TA512444.0335      |
| 3,38                   |                                                                                    | M3,5x0,35                                                                          | 66             | 28             | 23             | 36             | 0,9            | 6                      | TA212444.0338      | TA512444.0338      |
| 3,40                   | MJ4x0,7                                                                            |                                                                                    | 66             | 28             | 23             | 36             | 0,9            | 6                      | TA212444.0340      | TA512444.0340      |
| 3,50                   | M4x0,5 / #8-32 / #8-36                                                             |                                                                                    | 66             | 28             | 23             | 36             | 0,9            | 6                      | TA212444.0350      | TA512444.0350      |
| 3,55                   |                                                                                    |                                                                                    | 66             | 28             | 23             | 36             | 0,9            | 6                      | TA212444.0355      | TA512444.0355      |
| 3,60                   | MJ4x0,5                                                                            |                                                                                    | 66             | 28             | 23             | 36             | 0,9            | 6                      | TA212444.0360      | TA512444.0360      |
| 3,65                   | M4x0,35                                                                            |                                                                                    | 66             | 28             | 23             | 36             | 0,9            | 6                      | TA212444.0365      | TA512444.0365      |
| 3,70                   | M4,5                                                                               | M4                                                                                 | 66             | 28             | 23             | 36             | 1,0            | 6                      | TA212444.0370      | TA512444.0370      |
| 3,80                   |                                                                                    | M4x0,5 / #8-32                                                                     | 74             | 36             | 29             | 36             | 1,0            | 6                      | TA212444.0380      | TA512444.0380      |
| 3,88                   |                                                                                    | M4x0,35                                                                            | 74             | 36             | 29             | 36             | 1,0            | 6                      | TA212444.0388      | TA512444.0388      |
| 3,90                   | MJ4,5x0,75 / #10-24                                                                |                                                                                    | 74             | 36             | 29             | 36             | 1,0            | 6                      | TA212444.0390      | TA512444.0390      |
| 4,00                   |                                                                                    |                                                                                    | 74             | 36             | 29             | 36             | 1,0            | 6                      | TA212444.0400      | TA512444.0400      |
| 4,10                   | MJ4,5x0,5 / #10-32                                                                 |                                                                                    | 74             | 36             | 29             | 36             | 1,1            | 6                      | TA212444.0410      | TA512444.0410      |
| 4,15                   | M5x0,9                                                                             |                                                                                    | 74             | 36             | 29             | 36             | 1,1            | 6                      | TA212444.0415      | TA512444.0415      |
| 4,20                   | M5 / M5x0,75                                                                       | M4,5                                                                               | 74             | 36             | 29             | 36             | 1,1            | 6                      | TA212444.0420      | TA512444.0420      |
| 4,30                   | MJ5x0,8                                                                            | M4,5x0,5 / #10-24 (GAL)                                                            | 74             | 36             | 29             | 36             | 1,1            | 6                      | TA212444.0430      | TA512444.0430      |
| 4,35                   |                                                                                    | #10-24                                                                             | 74             | 36             | 29             | 36             | 1,1            | 6                      | TA212444.0435      | TA512444.0435      |
| 4,40                   |                                                                                    |                                                                                    | 74             | 36             | 29             | 36             | 1,1            | 6                      | TA212444.0440      | TA512444.0440      |
| 4,45                   |                                                                                    | #10-32                                                                             | 74             | 36             | 29             | 36             | 1,1            | 6                      | TA212444.0445      | TA512444.0445      |
| 4,50                   | M5x0,5 / #12-24                                                                    |                                                                                    | 74             | 36             | 29             | 36             | 1,2            | 6                      | TA212444.0450      | TA512444.0450      |
| 4,60                   | M5,5 / MJ5x0,5 / #12-28                                                            |                                                                                    | 74             | 36             | 29             | 36             | 1,2            | 6                      | TA212444.0460      | TA512444.0460      |
| 4,65                   |                                                                                    | M5                                                                                 | 74             | 36             | 29             | 36             | 1,2            | 6                      | TA212444.0465      | TA512444.0465      |
| 4,70                   |                                                                                    | M5x0,75                                                                            | 74             | 36             | 29             | 36             | 1,2            | 6                      | TA212444.0470      | TA512444.0470      |
| 4,80                   |                                                                                    | M5x0,5                                                                             | 82             | 44             | 35             | 36             | 1,2            | 6                      | TA212444.0480      | TA512444.0480      |
| 4,90                   |                                                                                    |                                                                                    | 82             | 44             | 35             | 36             | 1,3            | 6                      | TA212444.0490      | TA512444.0490      |
| 5,00                   | M6                                                                                 | #12-24                                                                             | 82             | 44             | 35             | 36             | 1,3            | 6                      | TA212444.0500      | TA512444.0500      |
| 5,10                   | MJ6x1 / 1/4-20                                                                     | M5,5 / #12-28                                                                      | 82             | 44             | 35             | 36             | 1,3            | 6                      | TA212444.0510      | TA512444.0510      |
| 5,20                   | M6x0,75                                                                            |                                                                                    | 82             | 44             | 35             | 36             | 1,3            | 6                      | TA212444.0520      | TA512444.0520      |
| 5,25                   |                                                                                    |                                                                                    | 82             | 44             | 35             | 36             | 1,3            | 6                      | TA212444.0525      | TA512444.0525      |
| 5,30                   |                                                                                    | M5,5x0,5                                                                           | 82             | 44             | 35             | 36             | 1,4            | 6                      | TA212444.0530      | TA512444.0530      |
| 5,40                   |                                                                                    |                                                                                    | 82             | 44             | 35             | 36             | 1,4            | 6                      | TA212444.0540      | TA512444.0540      |
| 5,50                   | M6x0,5 / 1/4-28                                                                    |                                                                                    | 82             | 44             | 35             | 36             | 1,4            | 6                      | TA212444.0550      | TA512444.0550      |
| 5,55                   |                                                                                    | M6 (GAL)                                                                           | 82             | 44             | 35             | 36             | 1,4            | 6                      | TA212444.0555      | TA512444.0555      |
| 5,60                   | MJ6x0,5                                                                            | M6                                                                                 | 82             | 44             | 35             | 36             | 1,4            | 6                      | TA212444.0560      | TA512444.0560      |
| 5,70                   |                                                                                    | M6x0,75 / 1/4-20 (GAL)                                                             | 82             | 44             | 35             | 36             | 1,4            | 6                      | TA212444.0570      | TA512444.0570      |
| 5,80                   |                                                                                    | M6x0,5                                                                             | 82             | 44             | 35             | 36             | 1,5            | 6                      | TA212444.0580      | TA512444.0580      |
| 5,90                   |                                                                                    |                                                                                    | 82             | 44             | 35             | 36             | 1,5            | 6                      | TA212444.0590      | TA512444.0590      |
| 6,00                   | M7                                                                                 |                                                                                    | 82             | 44             | 35             | 36             | 1,5            | 6                      | TA212444.0600      | TA512444.0600      |
| 6,10                   | MJ7x1                                                                              |                                                                                    | 91             | 53             | 43             | 36             | 1,5            | 8                      | TA212444.0610      | TA512444.0610      |
| 6,20                   | M7x0,75                                                                            |                                                                                    | 91             | 53             | 43             | 36             | 1,6            | 8                      | TA212444.0620      | TA512444.0620      |

## EF-Drill-GG

Für die Bearbeitung von Gusswerkstoffen  
For the machining of cast materials

**5 x D** Lange Ausführung  
Long design

VHM  
Carbide

TIALN

DIN  
6537 L

R30

Z2

4FF



140°



IT9-IT10

DIN 6535

HA  
HEGG  
Cast iron

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material

» 14

**5 x D**

K 1.1-4.2

| ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps | Gewindeformer<br>Cold-forming taps |                |                |                |                |                |    | ø d <sub>2</sub><br>h6 | EF-Drill<br>GG-5xD<br>HA | EF-Drill<br>GG-5xD<br>HE |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|----|------------------------|--------------------------|--------------------------|
|                        |                       |                                    | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> |    |                        |                          |                          |
| 6,30                   |                       |                                    | 91             | 53             | 43             | 36             | 1,6            | 8  |                        | TA212444.0630            | TA512444.0630            |
| 6,35                   | MJ7x0,75              |                                    | 91             | 53             | 43             | 36             | 1,6            | 8  |                        | TA212444.0635            | TA512444.0635            |
| 6,40                   |                       |                                    | 91             | 53             | 43             | 36             | 1,6            | 8  |                        | TA212444.0640            | TA512444.0640            |
| 6,50                   | M7x0,5                |                                    | 91             | 53             | 43             | 36             | 1,6            | 8  |                        | TA212444.0650            | TA512444.0650            |
| 6,60                   | 5/16-18               | M7                                 | 91             | 53             | 43             | 36             | 1,7            | 8  |                        | TA212444.0660            | TA512444.0660            |
| 6,70                   |                       | M7x0,75                            | 91             | 53             | 43             | 36             | 1,7            | 8  |                        | TA212444.0670            | TA512444.0670            |
| 6,80                   | M8 / G1/16            | M7x0,5                             | 91             | 53             | 43             | 36             | 1,7            | 8  |                        | TA212444.0680            | TA512444.0680            |
| 6,90                   | MJ8x1,25 / 5/16-24    |                                    | 91             | 53             | 43             | 36             | 1,7            | 8  |                        | TA212444.0690            | TA512444.0690            |
| 7,00                   | M8x1                  |                                    | 91             | 53             | 43             | 36             | 1,8            | 8  |                        | TA212444.0700            | TA512444.0700            |
| 7,10                   | MJ8x1                 |                                    | 91             | 53             | 43             | 36             | 1,8            | 8  |                        | TA212444.0710            | TA512444.0710            |
| 7,20                   | M8x0,75               |                                    | 91             | 53             | 43             | 36             | 1,8            | 8  |                        | TA212444.0720            | TA512444.0720            |
| 7,30                   |                       | 5/16-18                            | 91             | 53             | 43             | 36             | 1,8            | 8  |                        | TA212444.0730            | TA512444.0730            |
| 7,40                   |                       | M8 (GAL) / 5/16-24 (GAL)           | 91             | 53             | 43             | 36             | 1,9            | 8  |                        | TA212444.0740            | TA512444.0740            |
| 7,45                   |                       | M8 / 5/16-24                       | 91             | 53             | 43             | 36             | 1,9            | 8  |                        | TA212444.0745            | TA512444.0745            |
| 7,50                   | M8x0,5                |                                    | 91             | 53             | 43             | 36             | 1,9            | 8  |                        | TA212444.0750            | TA512444.0750            |
| 7,60                   |                       | M8x1                               | 91             | 53             | 43             | 36             | 1,9            | 8  |                        | TA212444.0760            | TA512444.0760            |
| 7,70                   |                       | M8x0,75                            | 91             | 53             | 43             | 36             | 1,9            | 8  |                        | TA212444.0770            | TA512444.0770            |
| 7,80                   | M9                    | M8x0,5                             | 91             | 53             | 43             | 36             | 2,0            | 8  |                        | TA212444.0780            | TA512444.0780            |
| 7,90                   | MJ9x1,25              |                                    | 91             | 53             | 43             | 36             | 2,0            | 8  |                        | TA212444.0790            | TA512444.0790            |
| 8,00                   | M9x1 / 3/8-16         |                                    | 91             | 53             | 43             | 36             | 2,0            | 8  |                        | TA212444.0800            | TA512444.0800            |
| 8,10                   | MJ9x1                 |                                    | 103            | 61             | 49             | 40             | 2,0            | 10 |                        | TA212444.0810            | TA512444.0810            |
| 8,20                   | M9x0,75               |                                    | 103            | 61             | 49             | 40             | 2,1            | 10 |                        | TA212444.0820            | TA512444.0820            |
| 8,30                   |                       |                                    | 103            | 61             | 49             | 40             | 2,1            | 10 |                        | TA212444.0830            | TA512444.0830            |
| 8,40                   |                       | M9 (GAL)                           | 103            | 61             | 49             | 40             | 2,1            | 10 |                        | TA212444.0840            | TA512444.0840            |
| 8,45                   |                       | M9                                 | 103            | 61             | 49             | 40             | 2,1            | 10 |                        | TA212444.0845            | TA512444.0845            |
| 8,50                   | M10 / M9x0,5 / 3/8-24 |                                    | 103            | 61             | 49             | 40             | 2,1            | 10 |                        | TA212444.0850            | TA512444.0850            |
| 8,60                   | MJ10x1,5              | M9x1                               | 103            | 61             | 49             | 40             | 2,2            | 10 |                        | TA212444.0860            | TA512444.0860            |
| 8,70                   |                       | M9x0,75                            | 103            | 61             | 49             | 40             | 2,2            | 10 |                        | TA212444.0870            | TA512444.0870            |
| 8,80                   | M10x1,25 / G1/8       | M9x0,5 / 3/8-16                    | 103            | 61             | 49             | 40             | 2,2            | 10 |                        | TA212444.0880            | TA512444.0880            |
| 8,90                   | MJ10x1,25             |                                    | 103            | 61             | 49             | 40             | 2,2            | 10 |                        | TA212444.0890            | TA512444.0890            |
| 9,00                   | M10x1                 | 3/8-24 (GAL)                       | 103            | 61             | 49             | 40             | 2,3            | 10 |                        | TA212444.0900            | TA512444.0900            |
| 9,10                   | MJ10x1                |                                    | 103            | 61             | 49             | 40             | 2,3            | 10 |                        | TA212444.0910            | TA512444.0910            |
| 9,20                   | M10x0,75              |                                    | 103            | 61             | 49             | 40             | 2,3            | 10 |                        | TA212444.0920            | TA512444.0920            |
| 9,30                   |                       | M10 (GAL)                          | 103            | 61             | 49             | 40             | 2,3            | 10 |                        | TA212444.0930            | TA512444.0930            |
| 9,35                   | MJ10x0,75             | M10                                | 103            | 61             | 49             | 40             | 2,3            | 10 |                        | TA212444.0935            | TA512444.0935            |
| 9,40                   | 7/16-14               | M10x1,25 (GAL)                     | 103            | 61             | 49             | 40             | 2,4            | 10 |                        | TA212444.0940            | TA512444.0940            |
| 9,45                   |                       | M10x1,25                           | 103            | 61             | 49             | 40             | 2,4            | 10 |                        | TA212444.0945            | TA512444.0945            |
| 9,50                   | M11 / M10x0,5         |                                    | 103            | 61             | 49             | 40             | 2,4            | 10 |                        | TA212444.0950            | TA512444.0950            |
| 9,60                   | MJ10x0,5 / MJ11x1,5   | M10x1                              | 103            | 61             | 49             | 40             | 2,4            | 10 |                        | TA212444.0960            | TA512444.0960            |
| 9,70                   |                       | M10x0,75                           | 103            | 61             | 49             | 40             | 2,4            | 10 |                        | TA212444.0970            | TA512444.0970            |
| 9,80                   |                       | M10x0,5                            | 103            | 61             | 49             | 40             | 2,5            | 10 |                        | TA212444.0980            | TA512444.0980            |
| 9,90                   | MJ11x1,25 / 7/16-20   |                                    | 103            | 61             | 49             | 40             | 2,5            | 10 |                        | TA212444.0990            | TA512444.0990            |
| 10,00                  | M11x1                 |                                    | 103            | 61             | 49             | 40             | 2,5            | 10 |                        | TA212444.1000            | TA512444.1000            |
| 10,10                  | MJ11x1                |                                    | 118            | 71             | 56             | 45             | 2,5            | 12 |                        | TA212444.1010            | TA512444.1010            |
| 10,20                  | M12 / M11x0,75        | 7/16-14 (GAL)                      | 118            | 71             | 56             | 45             | 2,6            | 12 |                        | TA212444.1020            | TA512444.1020            |
| 10,30                  |                       | M11 (GAL)                          | 118            | 71             | 56             | 45             | 2,6            | 12 |                        | TA212444.1030            | TA512444.1030            |
| 10,35                  | MJ11x0,75             | M11                                | 118            | 71             | 56             | 45             | 2,6            | 12 |                        | TA212444.1035            | TA512444.1035            |
| 10,40                  |                       |                                    | 118            | 71             | 56             | 45             | 2,6            | 12 |                        | TA212444.1040            | TA512444.1040            |
| 10,50                  | M12x1,5               | 7/16-20 (GAL)                      | 118            | 71             | 56             | 45             | 2,6            | 12 |                        | TA212444.1050            | TA512444.1050            |

ø 10,60 mm - ø 20,00 mm →



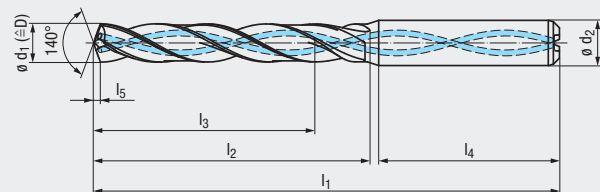


- Product Finder
- $v_c / f$
- BASIC
- STEEL
- INOX
- GG
- HCUT
- SpotDrill
- Zubehör  
Accessories
- 3 x D
- 5 x D
- 6 x D
- 8 x D
- 12 x D
- 2-3,5 x D

### EF-Drill-GG

Für die Bearbeitung von Gusswerkstoffen  
For the machining of cast materials

**5 x D** Lange Ausführung  
Long design



VHM  
Carbide

TIALN

DIN  
6537 L

R30



DIN 6535



GG  
Cast iron



**5 x D**

K 1.1-4.2

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material

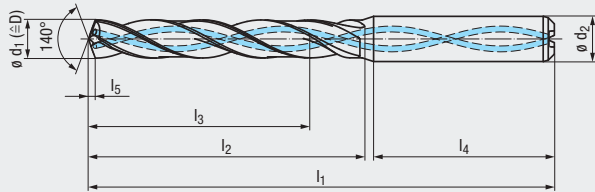
» 14

| ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps                                                              | Gewindeformer<br>Cold-forming taps                                                 |                |                |                |                |                |    | ø d <sub>2</sub><br>h6 | EF-Drill<br>GG-5xD | EF-Drill<br>GG-5xD |
|------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----|------------------------|--------------------|--------------------|
|                        |  |  | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | HA |                        | HE                 |                    |
| 10,60                  | MJ12x1,5                                                                           | M11x1                                                                              | 118            | 71             | 56             | 45             | 2,7            | 12 | TA212444.1060          | TA512444.1060      |                    |
| 10,70                  | M12x1,25 / 1/2-13                                                                  | M11x0,75                                                                           | 118            | 71             | 56             | 45             | 2,7            | 12 | TA212444.1070          | TA512444.1070      |                    |
| 10,80                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 2,7            | 12 | TA212444.1080          | TA512444.1080      |                    |
| 10,90                  | MJ12x1,25                                                                          |                                                                                    | 118            | 71             | 56             | 45             | 2,7            | 12 | TA212444.1090          | TA512444.1090      |                    |
| 11,00                  | M12x1                                                                              |                                                                                    | 118            | 71             | 56             | 45             | 2,8            | 12 | TA212444.1100          | TA512444.1100      |                    |
| 11,10                  | MJ12x1                                                                             |                                                                                    | 118            | 71             | 56             | 45             | 2,8            | 12 | TA212444.1110          | TA512444.1110      |                    |
| 11,20                  | M12x0,75                                                                           | M12 (GAL)                                                                          | 118            | 71             | 56             | 45             | 2,8            | 12 | TA212444.1120          | TA512444.1120      |                    |
| 11,25                  |                                                                                    | M12                                                                                | 118            | 71             | 56             | 45             | 2,8            | 12 | TA212444.1125          | TA512444.1125      |                    |
| 11,30                  |                                                                                    | M12x1,5 (GAL)                                                                      | 118            | 71             | 56             | 45             | 2,8            | 12 | TA212444.1130          | TA512444.1130      |                    |
| 11,35                  |                                                                                    | M12x1,5                                                                            | 118            | 71             | 56             | 45             | 2,8            | 12 | TA212444.1135          | TA512444.1135      |                    |
| 11,40                  |                                                                                    | M12x1,25 (GAL)                                                                     | 118            | 71             | 56             | 45             | 2,8            | 12 | TA212444.1140          | TA512444.1140      |                    |
| 11,45                  |                                                                                    | M12x1,25                                                                           | 118            | 71             | 56             | 45             | 2,9            | 12 | TA212444.1145          | TA512444.1145      |                    |
| 11,50                  | 1/2-20                                                                             |                                                                                    | 118            | 71             | 56             | 45             | 2,9            | 12 | TA212444.1150          | TA512444.1150      |                    |
| 11,60                  |                                                                                    | M12x1                                                                              | 118            | 71             | 56             | 45             | 2,9            | 12 | TA212444.1160          | TA512444.1160      |                    |
| 11,70                  |                                                                                    | M12x0,75                                                                           | 118            | 71             | 56             | 45             | 2,9            | 12 | TA212444.1170          | TA512444.1170      |                    |
| 11,80                  | G1/4                                                                               | 1/2-13                                                                             | 118            | 71             | 56             | 45             | 2,9            | 12 | TA212444.1180          | TA512444.1180      |                    |
| 11,90                  |                                                                                    |                                                                                    | 118            | 71             | 56             | 45             | 3,0            | 12 | TA212444.1190          | TA512444.1190      |                    |
| 12,00                  | M14                                                                                |                                                                                    | 118            | 71             | 56             | 45             | 3,0            | 12 | TA212444.1200          | TA512444.1200      |                    |
| 12,20                  | 9/16-12                                                                            |                                                                                    | 124            | 77             | 60             | 45             | 3,0            | 14 | TA212444.1220          | TA512444.1220      |                    |
| 12,30                  |                                                                                    |                                                                                    | 124            | 77             | 60             | 45             | 3,1            | 14 | TA212444.1230          | TA512444.1230      |                    |
| 12,50                  | M14x1,5                                                                            | G1/4 (GAL)                                                                         | 124            | 77             | 60             | 45             | 3,1            | 14 | TA212444.1250          | TA512444.1250      |                    |
| 12,60                  | MJ14x1,5                                                                           | M13x1                                                                              | 124            | 77             | 60             | 45             | 3,1            | 14 | TA212444.1260          | TA512444.1260      |                    |
| 12,70                  |                                                                                    | M13x0,75                                                                           | 124            | 77             | 60             | 45             | 3,2            | 14 | TA212444.1270          | TA512444.1270      |                    |
| 12,80                  | M14x1,25                                                                           |                                                                                    | 124            | 77             | 60             | 45             | 3,2            | 14 | TA212444.1280          | TA512444.1280      |                    |
| 12,90                  | MJ14x1,25 / 9/16-18                                                                |                                                                                    | 124            | 77             | 60             | 45             | 3,2            | 14 | TA212444.1290          | TA512444.1290      |                    |
| 13,00                  | M14x1                                                                              |                                                                                    | 124            | 77             | 60             | 45             | 3,2            | 14 | TA212444.1300          | TA512444.1300      |                    |
| 13,10                  | MJ14x1                                                                             | M14                                                                                | 124            | 77             | 60             | 45             | 3,3            | 14 | TA212444.1310          | TA512444.1310      |                    |
| 13,20                  | M14x0,75                                                                           |                                                                                    | 124            | 77             | 60             | 45             | 3,3            | 14 | TA212444.1320          | TA512444.1320      |                    |
| 13,30                  |                                                                                    | 9/16-12                                                                            | 124            | 77             | 60             | 45             | 3,3            | 14 | TA212444.1330          | TA512444.1330      |                    |
| 13,35                  |                                                                                    | M14x1,5                                                                            | 124            | 77             | 60             | 45             | 3,3            | 14 | TA212444.1335          | TA512444.1335      |                    |
| 13,45                  |                                                                                    | M14x1,25                                                                           | 124            | 77             | 60             | 45             | 3,4            | 14 | TA212444.1345          | TA512444.1345      |                    |
| 13,50                  | 5/8-11                                                                             |                                                                                    | 124            | 77             | 60             | 45             | 3,4            | 14 | TA212444.1350          | TA512444.1350      |                    |
| 13,60                  | MJ15x1,5                                                                           | M14x1 / 9/16-18 (GAL)                                                              | 124            | 77             | 60             | 45             | 3,4            | 14 | TA212444.1360          | TA512444.1360      |                    |
| 13,70                  |                                                                                    | M14x0,75                                                                           | 124            | 77             | 60             | 45             | 3,4            | 14 | TA212444.1370          | TA512444.1370      |                    |
| 13,80                  |                                                                                    |                                                                                    | 124            | 77             | 60             | 45             | 3,4            | 14 | TA212444.1380          | TA512444.1380      |                    |
| 14,00                  | M16 / M15x1                                                                        |                                                                                    | 124            | 77             | 60             | 45             | 3,5            | 14 | TA212444.1400          | TA512444.1400      |                    |
| 14,10                  | MJ15x1                                                                             |                                                                                    | 133            | 83             | 63             | 48             | 3,5            | 16 | TA212444.1410          | TA512444.1410      |                    |
| 14,30                  |                                                                                    |                                                                                    | 133            | 83             | 63             | 48             | 3,6            | 16 | TA212444.1430          | TA512444.1430      |                    |
| 14,40                  |                                                                                    |                                                                                    | 133            | 83             | 63             | 48             | 3,6            | 16 | TA212444.1440          | TA512444.1440      |                    |
| 14,50                  | M16x1,5 / 5/8-18                                                                   |                                                                                    | 133            | 83             | 63             | 48             | 3,6            | 16 | TA212444.1450          | TA512444.1450      |                    |
| 14,60                  | MJ16x1,5                                                                           | M15x1                                                                              | 133            | 83             | 63             | 48             | 3,6            | 16 | TA212444.1460          | TA512444.1460      |                    |
| 14,70                  |                                                                                    | M15x0,75                                                                           | 133            | 83             | 63             | 48             | 3,7            | 16 | TA212444.1470          | TA512444.1470      |                    |
| 14,80                  |                                                                                    | 5/8-11                                                                             | 133            | 83             | 63             | 48             | 3,7            | 16 | TA212444.1480          | TA512444.1480      |                    |
| 15,00                  | M16x1                                                                              |                                                                                    | 133            | 83             | 63             | 48             | 3,7            | 16 | TA212444.1500          | TA512444.1500      |                    |
| 15,10                  | MJ16x1                                                                             | M16                                                                                | 133            | 83             | 63             | 48             | 3,8            | 16 | TA212444.1510          | TA512444.1510      |                    |
| 15,35                  |                                                                                    | M16x1,5                                                                            | 133            | 83             | 63             | 48             | 3,8            | 16 | TA212444.1535          | TA512444.1535      |                    |
| 15,50                  | M18                                                                                |                                                                                    | 133            | 83             | 63             | 48             | 3,9            | 16 | TA212444.1550          | TA512444.1550      |                    |
| 15,60                  |                                                                                    | M16x1                                                                              | 133            | 83             | 63             | 48             | 3,9            | 16 | TA212444.1560          | TA512444.1560      |                    |
| 16,00                  | M18x2                                                                              |                                                                                    | 133            | 83             | 63             | 48             | 4,0            | 16 | TA212444.1600          | TA512444.1600      |                    |

## EF-Drill-GG

Für die Bearbeitung von Gusswerkstoffen  
For the machining of cast materials

**5 x D** Lange Ausführung  
Long design

VHM  
Carbide

TIALN

DIN  
6537 L

R30

Z2

4FF



140°



IT9-IT10

DIN 6535

HA  
HEGG  
Cast iron

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material

» 14

**5 x D**

K 1.1-4.2

| ø d <sub>1</sub><br>m7 | Gewindebohrer<br>Taps                                                              | Gewindeformer<br>Cold-forming taps                                                 |                |                |                |                |                |                        |                          |                          |
|------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|--------------------------|--------------------------|
|                        |  |  | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | ø d <sub>2</sub><br>h6 | EF-Drill<br>GG-5xD<br>HA | EF-Drill<br>GG-5xD<br>HE |
| 16,50                  | M18x1,5 / 3/4-10                                                                   |                                                                                    | 143            | 93             | 71             | 48             | 4,1            | 18                     | TA212444.1650            | TA512444.1650            |
| 17,00                  | M18x1                                                                              |                                                                                    | 143            | 93             | 71             | 48             | 4,2            | 18                     | TA212444.1700            | TA512444.1700            |
| 17,50                  | M20 / 3/4-16                                                                       |                                                                                    | 143            | 93             | 71             | 48             | 4,3            | 18                     | TA212444.1750            | TA512444.1750            |
| 17,60                  |                                                                                    | M18x1                                                                              | 143            | 93             | 71             | 48             | 4,4            | 18                     | TA212444.1760            | TA512444.1760            |
| 18,00                  | M20x2                                                                              |                                                                                    | 143            | 93             | 71             | 48             | 4,5            | 18                     | TA212444.1800            | TA512444.1800            |
| 18,50                  | M20x1,5                                                                            |                                                                                    | 153            | 101            | 77             | 50             | 4,6            | 20                     | TA212444.1850            | TA512444.1850            |
| 18,85                  |                                                                                    | M20                                                                                | 153            | 101            | 77             | 50             | 4,7            | 20                     | TA212444.1885            | TA512444.1885            |
| 19,00                  | M20x1 / G1/2                                                                       |                                                                                    | 153            | 101            | 77             | 50             | 4,7            | 20                     | TA212444.1900            | TA512444.1900            |
| 19,35                  |                                                                                    | M20x1,5                                                                            | 153            | 101            | 77             | 50             | 4,8            | 20                     | TA212444.1935            | TA512444.1935            |
| 19,50                  | M22 / 7/8-9                                                                        |                                                                                    | 153            | 101            | 77             | 50             | 4,8            | 20                     | TA212444.1950            | TA512444.1950            |
| 19,60                  |                                                                                    | M20x1                                                                              | 153            | 101            | 77             | 50             | 4,9            | 20                     | TA212444.1960            | TA512444.1960            |
| 20,00                  | M22x2                                                                              |                                                                                    | 153            | 101            | 77             | 50             | 5,0            | 20                     | TA212444.2000            | TA512444.2000            |

Product  
Finderv<sub>c</sub> / f

BASIC

STEEL

INOX

GG

HCUT

SpotDrill

Zubehör  
Accessories

3 x D

5 x D

6 x D

8 x D

12 x D

2-3,5 x D

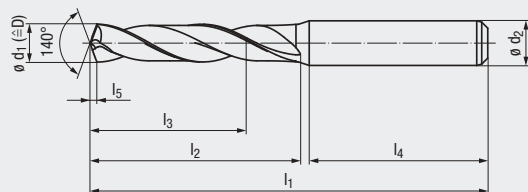


- Product Finder
- V<sub>c</sub> / f
- BASIC
- STEEL
- INOX
- GG
- HCUT
- SpotDrill
- Zubehör  
Accessories
- 3 x D
- 5 x D
- 6 x D
- 8 x D
- 12 x D
- 2-3,5 x D

### EF-Drill-HCUT

Für die Bearbeitung von gehärteten Stählen  
mit einer Härte von 50-67 HRC  
For the machining of hardened steels  
with a hardness of 50-67 HRC

**3 x D** Kurze Ausführung  
Short design



VHM  
Carbide

TIALN

DIN  
6537 K

R30

Z2

2FF

140°

IT9-IT10

DIN 6535

HA

HCUT  
Hardened  
steels



**3 x D**

H 1.1-1.5

Bohrtiefe  
Drill depth

Einsatzgebiete – Material  
Applications – material

» 14

| ø d <sub>1</sub><br>m7 | HCUT-Gewindebohrer<br>HCUT Taps |                |                |                |                |                |                | ø d <sub>2</sub><br>h6 | EF-Drill<br>HCUT-3xD<br><br>HA |  |
|------------------------|---------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------------|--------------------------------|--|
|                        |                                 | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | l <sub>5</sub> | l <sub>6</sub> |                        |                                |  |
| 2,55                   | M3                              | 57             | 16             | 11             | 36             | 0,5            | 6              |                        | TA107725.0255                  |  |
| 3,00                   |                                 | 62             | 20             | 14             | 36             | 0,6            | 6              |                        | TA107725.0300                  |  |
| 3,40                   | M4                              | 62             | 20             | 14             | 36             | 0,7            | 6              |                        | TA107725.0340                  |  |
| 3,50                   |                                 | 62             | 20             | 14             | 36             | 0,7            | 6              |                        | TA107725.0350                  |  |
| 4,00                   |                                 | 66             | 24             | 17             | 36             | 0,8            | 6              |                        | TA107725.0400                  |  |
| 4,30                   | M5                              | 66             | 24             | 17             | 36             | 0,8            | 6              |                        | TA107725.0430                  |  |
| 4,50                   |                                 | 66             | 24             | 17             | 36             | 0,9            | 6              |                        | TA107725.0450                  |  |
| 5,00                   |                                 | 66             | 28             | 20             | 36             | 1,0            | 6              |                        | TA107725.0500                  |  |
| 5,10                   | M6                              | 66             | 28             | 20             | 36             | 1,0            | 6              |                        | TA107725.0510                  |  |
| 5,50                   |                                 | 66             | 28             | 20             | 36             | 1,1            | 6              |                        | TA107725.0550                  |  |
| 6,00                   |                                 | 66             | 28             | 20             | 36             | 1,1            | 6              |                        | TA107725.0600                  |  |
| 6,50                   |                                 | 79             | 34             | 24             | 36             | 1,2            | 8              |                        | TA107725.0650                  |  |
| 6,90                   | M8                              | 79             | 34             | 24             | 36             | 1,3            | 8              |                        | TA107725.0690                  |  |
| 7,00                   |                                 | 79             | 34             | 24             | 36             | 1,3            | 8              |                        | TA107725.0700                  |  |
| 7,10                   | M8 x 1                          | 79             | 41             | 29             | 36             | 1,3            | 8              |                        | TA107725.0710                  |  |
| 7,50                   |                                 | 79             | 41             | 29             | 36             | 1,4            | 8              |                        | TA107725.0750                  |  |
| 8,00                   |                                 | 79             | 41             | 29             | 36             | 1,5            | 8              |                        | TA107725.0800                  |  |
| 8,50                   |                                 | 89             | 47             | 35             | 40             | 1,6            | 10             |                        | TA107725.0850                  |  |
| 8,60                   | M10                             | 89             | 47             | 35             | 40             | 1,6            | 10             |                        | TA107725.0860                  |  |
| 8,80                   | G 1/8                           | 89             | 47             | 35             | 40             | 1,7            | 10             |                        | TA107725.0880                  |  |
| 9,00                   |                                 | 89             | 47             | 35             | 40             | 1,7            | 10             |                        | TA107725.0900                  |  |
| 9,10                   | M10 x 1                         | 89             | 47             | 35             | 40             | 1,7            | 10             |                        | TA107725.0910                  |  |
| 9,50                   |                                 | 89             | 47             | 35             | 40             | 1,8            | 10             |                        | TA107725.0950                  |  |
| 10,00                  |                                 | 89             | 47             | 35             | 40             | 1,9            | 10             |                        | TA107725.1000                  |  |
| 10,40                  | M12                             | 102            | 55             | 40             | 45             | 1,9            | 12             |                        | TA107725.1040                  |  |
| 10,50                  |                                 | 102            | 55             | 40             | 45             | 2,0            | 12             |                        | TA107725.1050                  |  |
| 10,60                  | M12 x 1,5                       | 102            | 55             | 40             | 45             | 2,0            | 12             |                        | TA107725.1060                  |  |
| 11,00                  |                                 | 102            | 55             | 40             | 45             | 2,1            | 12             |                        | TA107725.1100                  |  |
| 11,50                  |                                 | 102            | 55             | 40             | 45             | 2,1            | 12             |                        | TA107725.1150                  |  |
| 11,90                  | G 1/4                           | 102            | 55             | 40             | 45             | 2,2            | 12             |                        | TA107725.1190                  |  |
| 12,00                  |                                 | 102            | 55             | 40             | 45             | 2,2            | 12             |                        | TA107725.1200                  |  |
| 12,60                  | M14 x 1,5                       | 107            | 60             | 43             | 45             | 2,3            | 14             |                        | TA107725.1260                  |  |
| 14,20                  | M16                             | 115            | 65             | 45             | 48             | 2,6            | 16             |                        | TA107725.1420                  |  |
| 14,60                  | M16 x 1,5                       | 115            | 65             | 45             | 48             | 2,7            | 16             |                        | TA107725.1460                  |  |

# 2-3,5xD



### NC SpotDrill-142°

Zum Anzentrieren für Werkzeuge mit Spitzenwinkel  $\leq 140^\circ$   
Spot drilling for tools with a point angle  $\leq 140^\circ$

VHM  
Carbide

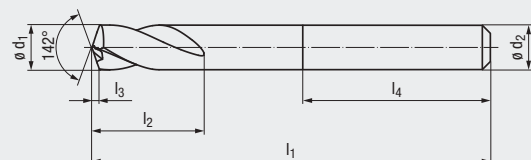
TIALN

Z2



DIN 6535

HA



Spitzenwinkel  
Point angle

**142°**

Einsatzgebiete – Material  
Applications – material

» 14

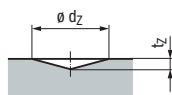
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|---|---------|---|---------------|---|---------|
| P | 1.1-5.1 | M | 1.1-4.1       | K | 1.1-4.2 |
| N | 1.1-1.5 | N | 2.1-2.8       | N | 5.1     |
| S | 1.2-1.3 | S | 2.2, 2.4, 2.6 | H | 1.1     |

NC SpotDrill  
142°

HA

| $\emptyset d_1$<br>h6 | $l_1$ | $l_2$ | $l_3$ | $l_4$ | $\emptyset d_2$<br>h6 |               |
|-----------------------|-------|-------|-------|-------|-----------------------|---------------|
| 3,00                  | 51    | 13    | 0,52  | 28    | 3                     | TN103344.0300 |
| 4,00                  | 57    | 19    | 0,69  | 28    | 4                     | TN103344.0400 |
| 5,00                  | 57    | 19    | 0,86  | 30    | 5                     | TN103344.0500 |
| 6,00                  | 57    | 19    | 1,03  | 36    | 6                     | TN103344.0600 |
| 8,00                  | 70    | 25    | 1,38  | 36    | 8                     | TN103344.0800 |
| 10,00                 | 73    | 25    | 1,72  | 40    | 10                    | TN103344.1000 |
| 12,00                 | 74    | 25    | 2,07  | 45    | 12                    | TN103344.1200 |
| 16,00                 | 102   | 25    | 2,75  | 48    | 16                    | TN103344.1600 |

Berechnung der Bohrtiefe  $t_z$  auf Basis des gewünschten Anzentrierungsdurchmesser  $d_z$   
Calculation of the drilling depth  $t_z$  based on the desired spot drilling diameter  $d_z$



$$t_z = \tan \left( 90 - \frac{142}{2} \right) \times \frac{d_z}{2}$$



Product  
Finder $v_c / f$ 

BASIC

STEEL

INOX

GG

HCUT

SpotDrill

Zubehör  
Accessories

3 x D

5 x D

6 x D

8 x D

12 x D

2-3,5 x D



Product  
Finder

v<sub>c</sub> / f

BASIC

STEEL

INOX

GG

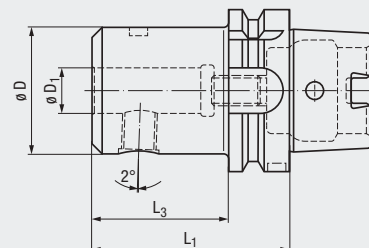
HCUT

SpotDrill

Zubehör  
Accessories

# HSK-A

## DIN 69893-1



Für Zylinderschäfte  
nach DIN 6535 HE

For straight shanks  
acc. DIN 6535 HE



|           | Ø D <sub>1</sub> | Ø D | L <sub>3</sub> | L <sub>1</sub> | Schaftgröße<br>Shank size |                 |
|-----------|------------------|-----|----------------|----------------|---------------------------|-----------------|
| 3 x D     | 6                | 25  | 54             | 80             | HSK-A63                   | TCWNHS63.060800 |
| 5 x D     | 8                | 28  | 54             | 80             | HSK-A63                   | TCWNHS63.080800 |
| 6 x D     | 10               | 35  | 54             | 80             | HSK-A63                   | TCWNHS63.100800 |
| 8 x D     | 12               | 42  | 64             | 90             | HSK-A63                   | TCWNHS63.120900 |
| 12 x D    | 14               | 44  | 64             | 90             | HSK-A63                   | TCWNHS63.140900 |
| 2-3,5 x D | 16               | 48  | 74             | 100            | HSK-A63                   | TCWNHS63.161000 |
|           | 18               | 50  | 74             | 100            | HSK-A63                   | TCWNHS63.181000 |
|           | 20               | 52  | 74             | 100            | HSK-A63                   | TCWNHS63.201000 |
|           | 25               | 65  | 84             | 110            | HSK-A63                   | TCWNHS63.251100 |
|           | 32               | 72  | 84             | 110            | HSK-A63                   | TCWNHS63.321100 |



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743

## Spannschrauben mit Innensechskant

### Allen clamping screws



| Für<br>For<br>Ø D <sub>1</sub> | Größe<br>Dimension |                |
|--------------------------------|--------------------|----------------|
| 6                              | M 6 x 10 x SW 3    | TWA01001.22010 |
| 8                              | M 8 x 10 x SW 4    | TWA01001.25010 |
| 10                             | M10 x 12 x SW 5    | TWA01001.27012 |
| 12 - 14                        | M12 x 16 x SW 6    | TWA01001.30016 |
| 16 - 18                        | M14 x 16 x SW 6    | TWA01001.33016 |
| 20                             | M16 x 16 x SW 8    | TWA01001.35016 |
| 25                             | M18 x 20 x SW 10   | TWA01001.39020 |
| 32                             | M20 x 20 x SW 10   | TWA01001.42020 |



## T-Griff-Schraubendreher für Spannschrauben

### T-handle wrench for clamping screws



| Für<br>For<br>Ø D <sub>1</sub> | Größe<br>Dimension |                |
|--------------------------------|--------------------|----------------|
| 6                              | SW 3 x 100         | TWB03002.03010 |
| 8                              | SW 4 x 100         | TWB03002.04010 |
| 10                             | SW 5 x 150         | TWB03002.05015 |
| 12 - 16                        | SW 6 x 150         | TWB03002.06015 |
| 18 - 20                        | SW 8 x 150         | TWB03002.08015 |
| 25 - 32                        | SW10 x 200         | TWB03002.10020 |



## Verstellschrauben mit Innensechskant

### Allen adjusting screws



| Für<br>For<br>Ø D <sub>1</sub> | Größe<br>Dimension |                |
|--------------------------------|--------------------|----------------|
| 6                              | M 5 x 16 x SW 2,5  | TWA02001.20016 |
| 8                              | M 6 x 16 x SW 3    | TWA02001.22016 |
| 10                             | M 8 x 16 x SW 4    | TWA02001.25016 |
| 12 - 14                        | M10 x 16 x SW 5    | TWA02001.27016 |
| 16 - 18                        | M12 x 16 x SW 6    | TWA02001.30016 |
| 20 - 32                        | M16 x 20 x SW 6    | TWA02001.35020 |



## Winkelschraubendreher für Verstellschrauben

### Allen wrench for adjusting screws

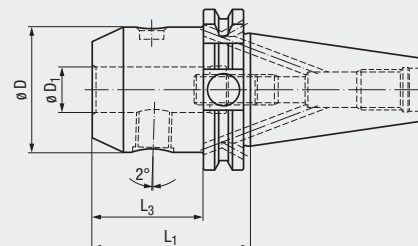


| Für<br>For<br>Ø D <sub>1</sub> | Größe<br>Dimension |                |
|--------------------------------|--------------------|----------------|
| 6                              | SW 2,5             | TWB03001.02500 |
| 8                              | SW 3               | TWB03001.03000 |
| 10                             | SW 4               | TWB03001.04000 |
| 12 - 14                        | SW 5               | TWB03001.05000 |
| 16 - 32                        | SW 6               | TWB03001.06000 |



**SK**

DIN ISO 7388-1 AD/AF

Für Zylinderschäfte  
nach DIN 6535 HEFor straight shanks  
acc. DIN 6535 HE

| $\varnothing D_1$ | $\varnothing D$ | $L_3$ | $L_1$ | Schaftgröße<br>Shank size |                 |
|-------------------|-----------------|-------|-------|---------------------------|-----------------|
| 6                 | 25              | 31    | 50    | SK40                      | TCWNSK40.060500 |
| 8                 | 28              | 31    | 50    | SK40                      | TCWNSK40.080500 |
| 10                | 35              | 31    | 50    | SK40                      | TCWNSK40.100500 |
| 12                | 42              | 31    | 50    | SK40                      | TCWNSK40.120500 |
| 14                | 44              | 31    | 50    | SK40                      | TCWNSK40.140500 |
| 16                | 48              | 44    | 63    | SK40                      | TCWNSK40.160630 |
| 18                | 50              | 44    | 63    | SK40                      | TCWNSK40.180630 |
| 20                | 52              | 44    | 63    | SK40                      | TCWNSK40.200630 |
| 25                | 65              | 81    | 100   | SK40                      | TCWNSK40.251000 |
| 32                | 72              | 81    | 100   | SK40                      | TCWNSK40.321000 |



| $\varnothing D_1$ | $\varnothing D$ | $L_3$ | $L_1$ | Schaftgröße<br>Shank size |                 |
|-------------------|-----------------|-------|-------|---------------------------|-----------------|
| 6                 | 25              | 44    | 63    | SK50                      | TCWNSK50.060630 |
| 8                 | 28              | 44    | 63    | SK50                      | TCWNSK50.080630 |
| 10                | 35              | 44    | 63    | SK50                      | TCWNSK50.100630 |
| 12                | 42              | 44    | 63    | SK50                      | TCWNSK50.120630 |
| 14                | 44              | 44    | 63    | SK50                      | TCWNSK50.140630 |
| 16                | 48              | 44    | 63    | SK50                      | TCWNSK50.160630 |
| 18                | 50              | 44    | 63    | SK50                      | TCWNSK50.180630 |
| 20                | 52              | 44    | 63    | SK50                      | TCWNSK50.200630 |
| 25                | 65              | 61    | 80    | SK50                      | TCWNSK50.250800 |
| 32                | 72              | 81    | 100   | SK50                      | TCWNSK50.321000 |

Anzugsbolzen für Steilkegel  
Pull studs for ISO tapers

» 70

**Umstellschraube Innenkühlung**

Internal coolant screw plug

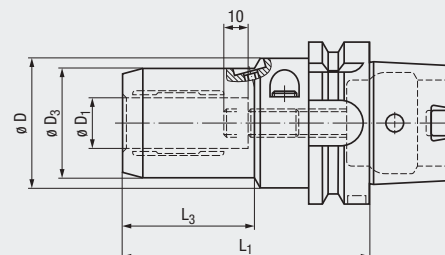


| Für<br>For | Größe<br>Dimension |                |
|------------|--------------------|----------------|
| SK 40      | M5 x 5 x SW 2,5    | TWA04001.20005 |
| SK 50      | M8 x 6 x SW 4      | TWA04001.25006 |

### HSK-A DIN 69893-1



Mit Werkzeuglängeneinstellung  
(Betätigung radial)  
With tool length adjustment  
(radial operation)



Für Zylinderschäfte  
nach DIN 6535 HA      For straight shanks  
acc. DIN 6535 HA



Schaftgröße  
Shank size

| 3 x D | 5 x D | 6 x D | 8 x D | 12 x D | 2-3,5 x D | Ø D <sub>1</sub> | Ø D <sub>3</sub> | Ø D | L <sub>3</sub> | L <sub>1</sub> | Schaftgröße<br>Shank size |                 |
|-------|-------|-------|-------|--------|-----------|------------------|------------------|-----|----------------|----------------|---------------------------|-----------------|
|       |       |       |       |        |           | 6                | 25,7             | 50  | 33             | 80             | HSK-A63                   | TCHDHS63.060800 |
|       |       |       |       |        |           | 8                | 27,7             | 50  | 34             | 80             | HSK-A63                   | TCHDHS63.080800 |
|       |       |       |       |        |           | 10               | 29,7             | 50  | 39             | 85             | HSK-A63                   | TCHDHS63.100850 |
|       |       |       |       |        |           | 12               | 31,6             | 50  | 45             | 90             | HSK-A63                   | TCHDHS63.120900 |
|       |       |       |       |        |           | 14               | 33,6             | 50  | 46             | 90             | HSK-A63                   | TCHDHS63.140900 |
|       |       |       |       |        |           | 16               | 37,6             | 50  | 52             | 95             | HSK-A63                   | TCHDHS63.160950 |
|       |       |       |       |        |           | 18               | 39,6             | 50  | 52             | 95             | HSK-A63                   | TCHDHS63.180950 |
|       |       |       |       |        |           | 20               | 41,6             | 50  | 58             | 100            | HSK-A63                   | TCHDHS63.201000 |
|       |       |       |       |        |           | 25               | 49,6             | 63  | 51             | 120            | HSK-A63                   | TCHDHS63.251200 |
|       |       |       |       |        |           | 32               | 59,8             | 63  | 59             | 125            | HSK-A63                   | TCHDHS63.321250 |



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

742 - 743

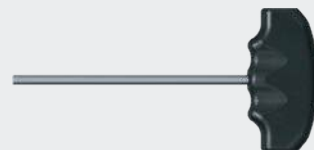
### Spannschrauben mit Innensechskant Allen clamping screws



| Für<br>For<br>Ø D <sub>1</sub> | Größe<br>Dimension |                |
|--------------------------------|--------------------|----------------|
| 6 - 20                         | M10 x 12 x SW5     | TWA01002.27012 |
| 25 - 32                        | M14 x 16 x SW6     | TWA01002.33016 |



### T-Griff-Schraubendreher für Spannschrauben T-handle wrench for clamping screws



| Für<br>For<br>Ø D <sub>1</sub> | Größe<br>Dimension |                |
|--------------------------------|--------------------|----------------|
| 6 - 20                         | SW 5 x 150         | TWB03002.05015 |
| 25 - 32                        | SW 6 x 150         | TWB03002.06015 |



### Serviceleistungen

- Einbauteile des Spannsystems erneuern
- Radial-/Axialverstellung erneuern
- Dehnrate einstellen
- Drehmoment prüfen
- Rundlauf prüfen

### Service options

- Replace spare parts of the clamping system
- Replace radial / axial adjustment
- Adjust expansion rate
- Check torque
- Check concentricity

### Winkelschraubendreher für Verstellerschrauben Allen wrench for adjusting screws



| Für<br>For<br>Ø D <sub>1</sub> | Größe<br>Dimension |                |
|--------------------------------|--------------------|----------------|
| 6 - 12                         | SW 2,5             | TWB03001.02500 |
| 14 - 20                        | SW 3               | TWB03001.03000 |
| 25 - 32                        | SW 4               | TWB03001.04000 |

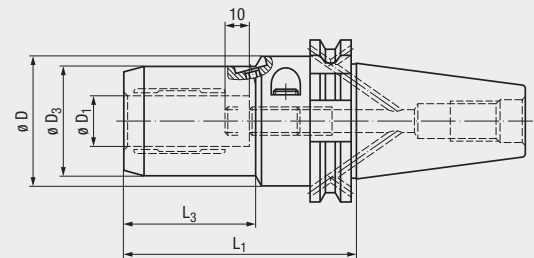


**SK**

DIN ISO 7388-1 AD/AF



Mit Werkzeuglängeneinstellung  
(Betätigung radial)  
With tool length adjustment  
(radial operation)



Für Zylinderschäfte nach DIN 6535 HA  
For straight shanks acc. DIN 6535 HA

| $\varnothing D_1$ | $\varnothing D_3$ | $\varnothing D$ | $L_3$ | $L_1$ | Schaftgröße<br>Shank size |                 |
|-------------------|-------------------|-----------------|-------|-------|---------------------------|-----------------|
| 6                 | 25,7              | 50              | 33    | 72    | SK 40                     | TCHDSK40.060720 |
| 8                 | 27,7              | 50              | 34    | 72    | SK 40                     | TCHDSK40.080720 |
| 10                | 29,7              | 50              | 39    | 77    | SK 40                     | TCHDSK40.100770 |
| 12                | 31,6              | 50              | 40    | 77    | SK 40                     | TCHDSK40.120770 |
| 14                | 33,6              | 50              | 46    | 82    | SK 40                     | TCHDSK40.140820 |
| 16                | 37,6              | 50              | 47    | 82    | SK 40                     | TCHDSK40.160820 |
| 18                | 39,6              | 50              | 47    | 82    | SK 40                     | TCHDSK40.180820 |
| 20                | 41,6              | 50              | 48    | 82    | SK 40                     | TCHDSK40.200820 |
| 25                | 49,6              | 63              | 51    | 117   | SK 40                     | TCHDSK40.251170 |
| 32                | 59,9              | 63              | 59    | 117   | SK 40                     | TCHDSK40.321170 |



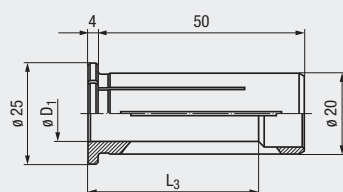
| $\varnothing D_1$ | $\varnothing D_3$ | $\varnothing D$ | $L_3$ | $L_1$ | Schaftgröße<br>Shank size |                 |
|-------------------|-------------------|-----------------|-------|-------|---------------------------|-----------------|
| 20                | 41,6              | 50              | 48    | 82    | SK 50                     | TCHDSK50.200820 |
| 25                | 49,6              | 63              | 51    | 117   | SK 50                     | TCHDSK50.251170 |
| 32                | 59,9              | 63              | 59    | 117   | SK 50                     | TCHDSK50.321170 |



Anzugsbolzen für Steilkegel  
Pull studs for ISO tapers

» 70

### Reduzierhülsen $\varnothing 20$ mm Reduction sleeves dia. 20 mm



| $\varnothing D_1$ | $L_3$ |                 |
|-------------------|-------|-----------------|
| 3                 | 28    | TCHDRD20.030500 |
| 6                 | 36    | TCHDRD20.060500 |
| 8                 | 37    | TCHDRD20.080500 |
| 10                | 40    | TCHDRD20.100500 |
| 12                | 45    | TCHDRD20.120500 |
| 14                | 45    | TCHDRD20.140500 |
| 16                | 48    | TCHDRD20.160500 |
| 18                | 48    | TCHDRD20.180500 |

### Umstellschraube Innenkühlung Internal coolant screw plug



| Für<br>For | Größe<br>Dimension |                |
|------------|--------------------|----------------|
| SK 40      | M5 x 5 x SW 2,5    | TWA04001.20005 |
| SK 50      | M8 x 6 x SW 4      | TWA04001.25006 |

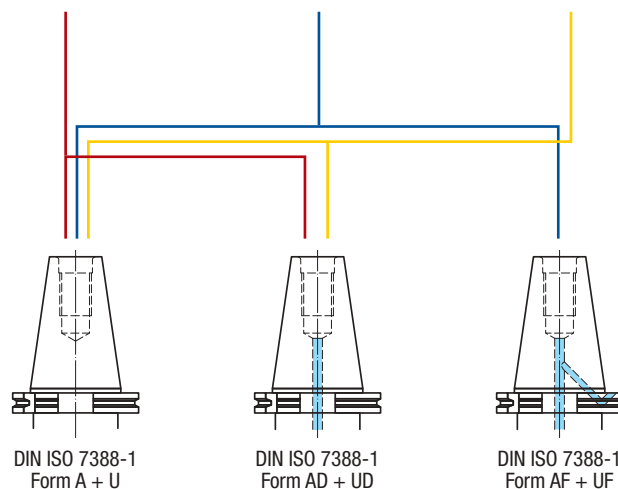




|                        |
|------------------------|
| Product Finder         |
| v <sub>c</sub> / f     |
| BASIC                  |
| STEEL                  |
| INOX                   |
| GG                     |
| HCUT                   |
| SpotDrill              |
| Zubehör<br>Accessories |
| 3 x D                  |
| 5 x D                  |
| 6 x D                  |
| 8 x D                  |
| 12 x D                 |
| 2-3,5 x D              |



|                                                                                              |     |    |                           |                           |                           |
|----------------------------------------------------------------------------------------------|-----|----|---------------------------|---------------------------|---------------------------|
| <b>Für Steilkegelschäfte nach DIN ISO 7388-1</b><br>For ISO taper shanks acc. DIN ISO 7388-1 |     |    |                           |                           |                           |
|                                                                                              |     |    |                           |                           |                           |
| Für Steilkegelgröße<br>For ISO taper size                                                    |     |    | DIN ISO 7388-3<br>Form AD | DIN ISO 7388-3<br>Form AF | DIN ISO 7388-3<br>Form UD |
|                                                                                              | G   | SW |                           |                           |                           |
| <b>SK 40</b>                                                                                 | M16 | 19 | TWA03001.04000            | TWA03002.04000            | TWA03003.04000            |
| <b>SK 50</b>                                                                                 | M24 | 30 | TWA03001.05000            | TWA03002.05000            | TWA03003.05000            |



| Product<br>Finder      |
|------------------------|
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



Gewindebohrer  
Taps

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| Produktseiten                        | Product pages                               | 92 - 306 |

| Product Finder      |
|---------------------|
| V <sub>c</sub>      |
| M                   |
| MF                  |
| UNC<br>UN-8         |
| UNF<br>UNEF         |
| G, Rp<br>NPSM, NPSF |
| NPT, NPTF<br>Rc, W  |
| BSW, BSF            |
| Pg                  |
| MJ<br>UNJC, UNJF    |

|                                                                                                                                                                                                        |                                                                                                                                                                                                        |                                                                                                                                                                                                                   |                                                                                                                                                                                                                                         |                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Gewindebohrer mit verstärktem Schaft<br/>Taps with reinforced shank</p>  <p><b>Rekord 1</b><br/><b>Enorm 1</b></p> | <p>Gewindebohrer mit durchfallendem Schaft<br/>Taps with reduced shank</p>  <p><b>Rekord 2</b><br/><b>Enorm 2</b></p> | <p>Gewindebohrer mit extra-langem Schaft<br/>Taps with extra long shank</p>  <p><b>Rekord 1/2-LS</b><br/><b>Enorm 1/2-LS</b></p> | <p>Gewindebohrer mit langen Nuten und langem Schaft<br/>Taps with long flutes and long shank</p>  <p><b>Rekord 2-LF3</b><br/><b>Rekord 2-LF4</b></p> | <p>Gewindebohrer mit Spanglocke<br/>Taps with internal chip collector</p>  <p><b>Robust 2X</b><br/><b>Robust 2ST</b></p> |
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|                        | NPSF         |           | 247       |                      |           |           |
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|                        | NPTF         | 255 - 256 | 257       |                      |           |           |
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|                        | BSW          | 266       | 267 - 268 |                      |           |           |
|                        | BSF          | 270       | 271       |                      |           |           |
|                        | Pg           |           | 273       |                      |           |           |
|                        | MJ           | 274 - 275 |           |                      |           |           |
|                        | UNJC         | 276 - 277 |           |                      |           |           |
|                        | UNJF         | 278 - 279 |           |                      |           |           |
|                        | EG M (STI)   | 280 - 281 | 282 - 283 |                      |           |           |
|                        | EG UNC (STI) | 284 - 285 | 286       |                      |           |           |
|                        | EG UNF (STI) | 287 - 288 | 289       |                      |           |           |
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|                        | Tr-F         |           |           |                      |           |           |
|                        | Rd           |           |           |                      |           |           |

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Taper reamers 1:16 for tapered threads

265



Kühlschmierstoffe  
Coolant-lubricants

300 - 301

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| kurze Gewindebohrer<br>Short taps                                                 | Satz-Gewindebohrer<br>Sets of taps                                                | kurze Automaten-Gewindebohrer<br>Short taps for automatic lathes                  | Kombi-Gewindebohrer<br>Drill taps                                                 | Mutter-Gewindebohrer<br>Taps with long cutting part                               | Trapez-Gewindebohrer<br>Trapezoidal taps                                            |
|  |  |  |  |  |  |
| <b>Rekord Enorm</b>                                                               | <b>Set WM</b>                                                                     | <b>AUT</b>                                                                        | <b>KOMBI</b>                                                                      | <b>MMB</b>                                                                        | <b>TRAPEZ</b>                                                                       |

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|           |           |     |     |     |           | <b>UNEF</b>         |
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|           |           |     |     |     |           | <b>NPSF</b>         |
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|           |           |     |     |     |           | <b>Pg</b>           |
|           |           |     |     |     |           | <b>MJ</b>           |
|           |           |     |     |     |           | <b>UNJC</b>         |
|           |           |     |     |     |           | <b>UNJF</b>         |
|           |           |     |     |     |           | <b>EG M (STI)</b>   |
|           |           |     |     |     |           | <b>EG UNC (STI)</b> |
|           |           |     |     |     |           | <b>EG UNF (STI)</b> |
|           |           |     |     |     |           | <b>LK-M</b>         |
|           |           |     |     |     | 294 - 296 | <b>Tr</b>           |
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Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

| Product Finder         | <div></div> |     |           |         |         |         |         |          |          |          |          |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------|---------|---------|---------|---------|----------|----------|----------|----------|
| V <sub>c</sub>         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |           |         |         |         |         |          |          |          |          |
| M                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |           |         |         |         |         |          |          |          |          |
| MF                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |           |         |         |         |         |          |          |          |          |
| UNC<br>UN-8            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |           |         |         |         |         |          |          |          |          |
| UNF<br>UNEF            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |           |         |         |         |         |          |          |          |          |
| G, Rp<br>NPSM, NPSF    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |           |         |         |         |         |          |          |          |          |
| NPT, NPTF<br>Rc, W     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |           |         |         |         |         |          |          |          |          |
| BSW, BSF               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |           |         |         |         |         |          |          |          |          |
| Pg                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |           |         |         |         |         |          |          |          |          |
| MJ<br>UNJC, UNJF       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |           |         |         |         |         |          |          |          |          |
| EG (STI)               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |           |         |         |         |         |          |          |          |          |
| SELF-LOCK              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |           |         |         |         |         |          |          |          |          |
| Tr, Tr-F<br>Rd         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |           |         |         |         |         |          |          |          |          |
| Zubehör<br>Accessories |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |           |         |         |         |         |          |          |          |          |
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| M                      | ISO 1/4H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     | 93, 120   | 93, 121 | 95, 123 | 96, 124 | 96, 124 |          |          |          |          |
|                        | ISO 3/6G                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     | 93, 121   | 93, 121 | 96, 124 | 96, 124 | 97, 125 |          |          |          |          |
|                        | 6GX                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 151 |           |         |         |         |         | 109, 135 | 109, 135 | 109, 135 | 109, 135 |
|                        | 7G                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     | 93, 121   | 93, 121 | 97, 125 | 97, 125 | 97, 125 |          |          |          |          |
|                        | 6H +0,1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |     |           |         |         |         |         |          |          |          |          |
|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |           |         |         |         |         |          |          |          |          |
| MF                     | ISO 1/4H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     | 168 - 169 | 170     | 174     | 175     | 175     |          |          |          |          |
|                        | ISO 3/6G                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     | 170       | 170     | 175     | 175     | 175     |          |          |          |          |
|                        | 6GX                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |           |         |         |         |         |          |          |          |          |
|                        | 6HX +0,1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |           |         |         |         |         |          |          |          |          |
| UNC                    | 3B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     | 204, 208  |         |         |         |         |          |          |          |          |
|                        | 2B +0,05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |           |         |         |         |         |          |          |          |          |
| UNF                    | 3B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     | 216, 220  |         |         |         |         |          |          |          |          |
|                        | 2B +0,05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |           |         |         |         |         |          |          |          |          |
| G<br>(BSP)             | „X“ +0,05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |           |         |         |         |         |          |          |          |          |
|                        | „X“ +0,1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |           |         |         |         |         |          |          |          |          |
| Rp<br>(BSPP)           | „X“ +0,05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |           |         |         |         |         |          |          |          |          |





|          |          |          |          |          |          |          |          |          |     |           |           |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----|-----------|-----------|
|          |          |          |          | 113, 139 | 113, 139 |          |          |          |     | ISO 1/4H  | M         |
|          |          |          |          | 114, 140 | 114, 140 | 114, 140 | 114, 140 | 115, 141 |     | ISO 3/6G  |           |
| 111, 137 | 111, 137 | 111, 137 | 111, 137 |          |          |          |          |          |     | 6GX       |           |
|          |          |          |          | 115, 141 | 115, 141 |          |          |          |     | 7G        |           |
|          |          |          |          | 115, 141 | 115, 141 |          |          |          |     | 6H +0,1   |           |
|          |          |          |          | 167, 186 | 167      |          |          |          |     | ISO 1/4H  | MF        |
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|          |          |          |          |          |          |          |          |          | 202 | 6GX       |           |
|          |          |          |          |          |          |          |          |          | 202 | 6HX +0,1  |           |
|          |          |          |          | 207, 211 | 207, 211 |          |          |          |     | 3B        | UNC       |
|          |          |          |          | 207, 211 | 207, 211 |          |          |          |     | 2B +0,05  |           |
|          |          |          |          | 219, 223 | 219, 223 |          |          |          |     | 3B        | UNF       |
|          |          |          |          |          |          | 219, 223 |          | 219, 223 |     | 2B +0,05  |           |
|          |          |          |          |          |          | 237      |          | 237      | 242 | „X“ +0,05 | G (BSP)   |
|          |          |          |          |          |          |          |          |          | 242 | „X“ +0,1  |           |
|          |          |          |          |          |          |          |          |          | 245 | „X“ +0,05 | Rp (BSPP) |

Product Finder

V<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

| Product Finder      |                                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|---------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| V <sub>c</sub>      | <div>IKZ</div>    |     |     |     |     |
| M                   |                                                                                                    |                                                                                     |                                                                                     |                                                                                     |     |
| MF                  |                                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                       |
| UNC UN-8            |                                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                       |
| UNF UNEF            |                                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                       |
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| G, Rp NPSM, NPSF    | M                                                                                                  | 99, 127                                                                             | 127                                                                                 | 99, 127                                                                             | 99, 127                                                                               |
| NPT, NPTF Rc, W     | MF                                                                                                 | 177                                                                                 | 177                                                                                 | 177                                                                                 | 177                                                                                   |
| BSW, BSF            | G (BSP)                                                                                            |                                                                                     |                                                                                     |                                                                                     |                                                                                       |
| Pg                  | <div>IKZ</div>    |    |    |    |    |
| MJ UNJC, UNJF       |                                                                                                    |                                                                                     |                                                                                     |                                                                                     |    |
| EG (STI)            |                                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                       |
| SELF-LOCK           |                                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                       |
| Tr, Tr-F Rd         |                                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                       |
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| Zubehör Accessories | M                                                                                                  | 101                                                                                 | 101                                                                                 | 102                                                                                 | 105, 130                                                                              |
|                     | MF                                                                                                 |                                                                                     |                                                                                     |                                                                                     | 179                                                                                   |
|                     | G (BSP)                                                                                            |                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|                     | <div>IKZ</div>  |  |  |  |  |
|                     |                                                                                                    |                                                                                     |                                                                                     |                                                                                     |  |
|                     |                                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|                     |                                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                       |
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|                     | M                                                                                                  | 105, 131                                                                            |                                                                                     | 132                                                                                 | 107, 133, 146, 147                                                                    |
|                     | MF                                                                                                 | 163, 179                                                                            |                                                                                     |                                                                                     | 180, 188, 189                                                                         |
|                     | G (BSP)                                                                                            |                                                                                     | 235                                                                                 |                                                                                     |                                                                                       |
|                     | <div>IKZ</div>  |  |  |  |  |
|                     |                                                                                                    |                                                                                     |                                                                                     |                                                                                     |  |
|                     |                                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|                     |                                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                       |
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|                     | M                                                                                                  | 108, 134                                                                            | 109, 135, 146, 147                                                                  | 110, 136                                                                            | 110, 119, 136, 145, 146, 147                                                          |
|                     | MF                                                                                                 | 181                                                                                 | 181, 188, 189                                                                       | 182                                                                                 | 182, 188, 189                                                                         |
|                     | G (BSP)                                                                                            |                                                                                     |                                                                                     |                                                                                     |                                                                                       |

|                                                                                                                                      |  |  |  |  |                                                                                                                                        |  |  |  |  |                                                                                                                                     |  |  |  |  |                                                                                                                                 |  |  |  |  |                                                                                                                                   |  |  |  |  |                                                                                                                  |  |                                                                                                                                                                                                                                                                                                                                                                      |  |
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| <div><br/>Enorm<br/>Z-IKZ<br/>PM-GLT-1</div>         |  |  |  |  | <div><br/>Enorm<br/>Z/E-IKZ<br/>PM-GLT-1</div>         |  |  |  |  | <div><br/>Enorm<br/>Z-IKZ</div>                     |  |  |  |  | <div><br/>Enorm<br/>Z-IKZ<br/>GLT-1</div>       |  |  |  |  | <div><br/>Enorm<br/>Z/E-IKZ</div>               |  |  |  |  | <div>IKZ</div> <div></div>    |  | <div>Product<br/>Finder</div> <div>V<sub>c</sub></div> <div>M</div> <div>MF</div> <div>UNC<br/>UN-8</div> <div>UNF<br/>UNEF</div> <div>G, R<br/>NPSM, NPS</div> <div>NPT, NPTF<br/>Rc, W</div> <div>BSW, BSF</div> <div>Pg</div> <div>MJ<br/>UNJC, UNJF</div> <div>EG (STI)</div> <div>SELF-LOCK</div> <div>Tr, Tr-F<br/>Rd</div> <div>Zubehör<br/>Accessories</div> |  |
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| 111, 137                                                                                                                             |  |  |  |  | 111, 137                                                                                                                               |  |  |  |  | 138                                                                                                                                 |  |  |  |  | 112, 139                                                                                                                        |  |  |  |  | 113                                                                                                                               |  |  |  |  | M                                                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                      |  |
| 183 - 184                                                                                                                            |  |  |  |  |                                                                                                                                        |  |  |  |  |                                                                                                                                     |  |  |  |  |                                                                                                                                 |  |  |  |  | 186                                                                                                                               |  |  |  |  | MF                                                                                                               |  |                                                                                                                                                                                                                                                                                                                                                                      |  |
|                                                                                                                                      |  |  |  |  | 236                                                                                                                                    |  |  |  |  |                                                                                                                                     |  |  |  |  |                                                                                                                                 |  |  |  |  |                                                                                                                                   |  |  |  |  | G (BSP)                                                                                                          |  |                                                                                                                                                                                                                                                                                                                                                                      |  |
| <div><br/>Enorm<br/>Z/E-IKZ<br/>TIN</div>           |  |  |  |  | <div><br/>Enorm<br/>Z/E-IKZ<br/>GLT-1</div>           |  |  |  |  |                                                                                                                                     |  |  |  |  |                                                                                                                                 |  |  |  |  |                                                                                                                                   |  |  |  |  | <div>IKZ</div> <div></div>    |  |                                                                                                                                                                                                                                                                                                                                                                      |  |
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| 113, 139                                                                                                                             |  |  |  |  | 113, 139                                                                                                                               |  |  |  |  |                                                                                                                                     |  |  |  |  |                                                                                                                                 |  |  |  |  |                                                                                                                                   |  |  |  |  | M                                                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                      |  |
| 186                                                                                                                                  |  |  |  |  | 186                                                                                                                                    |  |  |  |  |                                                                                                                                     |  |  |  |  |                                                                                                                                 |  |  |  |  |                                                                                                                                   |  |  |  |  | MF                                                                                                               |  |                                                                                                                                                                                                                                                                                                                                                                      |  |
|                                                                                                                                      |  |  |  |  |                                                                                                                                        |  |  |  |  |                                                                                                                                     |  |  |  |  |                                                                                                                                 |  |  |  |  |                                                                                                                                   |  |  |  |  | G (BSP)                                                                                                          |  |                                                                                                                                                                                                                                                                                                                                                                      |  |
| <div><br/>Rekord<br/>A-GJV-IKZN<br/>PM-TICN</div> |  |  |  |  | <div><br/>Rekord<br/>A-GJV/E-IKZN<br/>PM-TICN</div> |  |  |  |  | <div><br/>Rekord<br/>A-GAL/E-IKZN<br/>TICN</div> |  |  |  |  | <div><br/>Rekord<br/>A-H-IKZN<br/>TICN</div> |  |  |  |  | <div><br/>Rekord<br/>A-Z-IKZN<br/>TICN</div> |  |  |  |  | <div>IKZN</div> <div></div> |  | <div></div>                                                                                                                                                                                                                                                                     |  |
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| 99, 127                                                                                                                              |  |  |  |  | 99, 127                                                                                                                                |  |  |  |  | 101                                                                                                                                 |  |  |  |  | 105, 131                                                                                                                        |  |  |  |  | 107, 133                                                                                                                          |  |  |  |  | M                                                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                      |  |
| 177                                                                                                                                  |  |  |  |  | 177                                                                                                                                    |  |  |  |  |                                                                                                                                     |  |  |  |  | 179                                                                                                                             |  |  |  |  | 180                                                                                                                               |  |  |  |  | MF                                                                                                               |  |                                                                                                                                                                                                                                                                                                                                                                      |  |
|                                                                                                                                      |  |  |  |  |                                                                                                                                        |  |  |  |  |                                                                                                                                     |  |  |  |  |                                                                                                                                 |  |  |  |  |                                                                                                                                   |  |  |  |  | G (BSP)                                                                                                          |  |                                                                                                                                                                                                                                                                                                                                                                      |  |
| <div><br/>Rekord<br/>A-Z/E-IKZN<br/>TICN</div>    |  |  |  |  | <div><br/>Rekord<br/>B-Z-IKZN<br/>PM-TIN-70</div>   |  |  |  |  | <div><br/>Rekord<br/>B-Z-IKZN<br/>PM-GLT-1</div> |  |  |  |  |                                                                                                                                 |  |  |  |  |                                                                                                                                   |  |  |  |  | <div>IKZN</div> <div></div> |  |                                                                                                                                                                                                                                                                                                                                                                      |  |
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| 108, 134                                                                                                                             |  |  |  |  | 109, 135                                                                                                                               |  |  |  |  | 109, 135                                                                                                                            |  |  |  |  |                                                                                                                                 |  |  |  |  |                                                                                                                                   |  |  |  |  | M                                                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                      |  |
| 181                                                                                                                                  |  |  |  |  | 181                                                                                                                                    |  |  |  |  | 181                                                                                                                                 |  |  |  |  |                                                                                                                                 |  |  |  |  |                                                                                                                                   |  |  |  |  | MF                                                                                                               |  |                                                                                                                                                                                                                                                                                                                                                                      |  |
|                                                                                                                                      |  |  |  |  |                                                                                                                                        |  |  |  |  |                                                                                                                                     |  |  |  |  |                                                                                                                                 |  |  |  |  |                                                                                                                                   |  |  |  |  | G (BSP)                                                                                                          |  |                                                                                                                                                                                                                                                                                                                                                                      |  |

# Einsatzempfehlungen und Schnittwerte

## Bitte beachten:

Die in den jeweiligen Spalten angegebenen Schnittgeschwindigkeiten (V<sub>C</sub> in m/min) sind Richtwerte, welche je nach Einsatzbedingungen (Material, Schmierung, Maschine, usw.) angepasst werden müssen.

Die empfohlenen Schnittgeschwindigkeiten sind bezogen auf einen Gewinde- Nenndurchmesser von 10 mm.

 = DIN-Form / Gänge (Anschnittlänge)

# Application recommendation and cutting data

## Please note:

The cutting speeds (V<sub>C</sub> in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.).

The recommended cutting speeds are related to a nominal thread diameter of 10 mm.

 = DIN form / threads (chamfer length)

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International comparison of materials, see page 764 - 785

| Einsatzgebiete – Material<br>Applications – material |                                                                     |                                                                       | Material-Beispiele<br>Material examples | Material-Nummern<br>Material numbers                              |
|------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------------|
| P                                                    | <b>Stahlwerkstoffe</b>                                              | <b>Steel materials</b>                                                |                                         |                                                                   |
|                                                      | 1.1 Kaltfließpresstähle, Baustähle, Automatenstähle, u.a.           | Cold-extrusion steels, Construction steels, Free-cutting steels, etc. | ≤ 600 N/mm <sup>2</sup>                 | Cq15 1.1132<br>S235JR (St37-2) 1.0037<br>10SPb20 1.0722           |
|                                                      | 2.1 Baustähle, Einsatzstähle, Stahlguss, u.a.                       | Construction steels, Cementation steels, Steel castings, etc.         | ≤ 800 N/mm <sup>2</sup>                 | E360 (St70-2) 1.0070<br>16MnCr5 1.7131<br>GS-25CrMo4 1.7218       |
|                                                      | 3.1 Einsatzstähle, Vergütungsstähle, Kaltarbeitsstähle, u.a.        | Cementation steels, Heat-treatable steels, Cold work steels, etc.     | ≤ 1000 N/mm <sup>2</sup>                | 20MoCr3 1.7320<br>42CrMo4 1.7225<br>102Cr6 1.2067                 |
|                                                      | 4.1 Vergütungsstähle, Kaltarbeitsstähle, Nitrierstähle, u.a.        | Heat-treatable steels, Cold work steels, Nitriding steels, etc.       | ≤ 1200 N/mm <sup>2</sup>                | 50CrMo4 1.7228<br>X45NiCrMo4 1.2767<br>31CrMo12 1.8515            |
|                                                      | 5.1 Hochlegierte Stähle, Kaltarbeitsstähle, Warmarbeitsstähle, u.a. | High-alloyed steels, Cold work steels, Hot work steels, etc.          | ≤ 1400 N/mm <sup>2</sup>                | X38CrMoV5-3 1.2367<br>X100CrMoV8-1-1 1.2990<br>X40CrMoV5-1 1.2344 |
| M                                                    | <b>Nichtrostende Stahlwerkstoffe</b>                                | <b>Stainless steel materials</b>                                      |                                         |                                                                   |
|                                                      | 1.1 Ferritisch, martensitisch                                       | Ferritic, martensitic                                                 | ≤ 950 N/mm <sup>2</sup>                 | X2CrTi12 1.4512                                                   |
|                                                      | 2.1 Austenitisch                                                    | Austenitic                                                            | ≤ 950 N/mm <sup>2</sup>                 | X6CrNiMoTi17-12-2 1.4571                                          |
|                                                      | 3.1 Austenitisch-ferritisch (Duplex)                                | Austenitic-ferritic (Duplex)                                          | ≤ 1100 N/mm <sup>2</sup>                | X2CrNiMoN22-5-3 1.4462                                            |
| K                                                    | 4.1 Austenitisch-ferritisch hitzebeständig (Super Duplex)           | Austenitic-ferritic heat-resistant (Super Duplex)                     | ≤ 1250 N/mm <sup>2</sup>                | X2CrNiMoN25-7-4 1.4410                                            |
|                                                      | <b>Gusswerkstoffe</b>                                               | <b>Cast materials</b>                                                 |                                         |                                                                   |
|                                                      | 1.1 Gusseisen mit Lamellengrafit (GJL)                              | Cast iron with lamellar graphite (GJL)                                | 100-250 N/mm <sup>2</sup>               | EN-GJL-200 (GG20) EN-JL-1030                                      |
|                                                      | 2.1 Gusseisen mit Kugelgrafit (GJS)                                 | Cast iron with nodular graphite (GJS)                                 | 250-450 N/mm <sup>2</sup>               | X6CrNiMoTi17-12-2 1.4571                                          |
| N                                                    | 2.2 Gusseisen mit Kugelgrafit (GJS)                                 | Cast iron with nodular graphite (GJS)                                 | 350-500 N/mm <sup>2</sup>               | X2CrNiMoN22-5-3 1.4462                                            |
|                                                      | 3.1 Gusseisen mit Vermiculargrafit (GJV)                            | Cast iron with vermicular graphite (GJV)                              | 500-900 N/mm <sup>2</sup>               | X2CrNiMoN25-7-4 1.4410                                            |
|                                                      | 3.2 Gusseisen mit Vermiculargrafit (GJV)                            | Cast iron with vermicular graphite (GJV)                              | 300-400 N/mm <sup>2</sup>               | EN-GJS-400-15 (GGG40) EN-JS-1030                                  |
|                                                      | 4.1 Temperguss (GTMW, GTMB)                                         | Malleable cast iron (GTMW, GTMB)                                      | 400-500 N/mm <sup>2</sup>               | EN-GJS-700-2 (GGG70) EN-JS-1070                                   |
| S                                                    | 4.2 Temperguss (GTMW, GTMB)                                         | Malleable cast iron (GTMW, GTMB)                                      | 250-500 N/mm <sup>2</sup>               | GJV 300                                                           |
|                                                      |                                                                     |                                                                       | 500-800 N/mm <sup>2</sup>               | GJV 450                                                           |
|                                                      |                                                                     |                                                                       |                                         | EN-GJMW-350-4 (GTW-35) EN-JM-1010                                 |
|                                                      |                                                                     |                                                                       |                                         | EN-GJMB-450-6 (GTS-45) EN-JM-1140                                 |
| H                                                    | <b>Nichteisenwerkstoffe</b>                                         | <b>Non ferrous materials</b>                                          |                                         |                                                                   |
|                                                      | <b>Aluminium-Legierungen</b>                                        | <b>Aluminium alloys</b>                                               |                                         |                                                                   |
|                                                      | 1.1 Aluminium-Knetlegierungen                                       | Aluminium wrought alloys                                              | ≤ 200 N/mm <sup>2</sup>                 | EN AW-AlMn1 EN AW-3103                                            |
|                                                      | 1.2 Aluminium-Knetlegierungen                                       | Aluminium wrought alloys                                              | ≤ 350 N/mm <sup>2</sup>                 | EN AW-AlMgSi EN AW-6060                                           |
| H                                                    | 1.3 Aluminium-Knetlegierungen                                       | Aluminium wrought alloys                                              | ≤ 550 N/mm <sup>2</sup>                 | EN AW-AlZn5Mg3Cu EN AW-7022                                       |
|                                                      | 1.4 Aluminium-Knetlegierungen                                       | Aluminium wrought alloys                                              | Si ≤ 7%                                 | EN AC-AlMg5 EN AC-307 G                                           |
|                                                      | 1.5 Aluminium-Gusslegierungen                                       | Aluminium cast alloys                                                 | 7% < Si ≤ 12%                           | EN AC-AISi9Cu3 EN AC-46500                                        |
|                                                      | 1.6 Aluminium-Gusslegierungen                                       | Aluminium cast alloys                                                 | 12% < Si ≤ 17%                          | GD-AISI17Cu4FeMg                                                  |
| N                                                    | <b>Kupfer-Legierungen</b>                                           | <b>Copper alloys</b>                                                  |                                         |                                                                   |
|                                                      | 2.1 Reinkupfer, niedriglegiertes Kupfer                             | Pure copper, low-alloyed copper                                       | ≤ 400 N/mm <sup>2</sup>                 | E-Cu 57 EN CW 004 A                                               |
|                                                      | 2.2 Kupfer-Zink-Legierungen (Messing, langspanend)                  | Copper-zinc alloys (brass, long-chipping)                             | ≤ 550 N/mm <sup>2</sup>                 | CuZn37 (Ms63) EN CW 508 L                                         |
|                                                      | 2.3 Kupfer-Zink-Legierungen (Messing, kurzspanend)                  | Copper-zinc alloys (brass, short-chipping)                            | ≤ 550 N/mm <sup>2</sup>                 | CuZn36Pb3 (Ms58) EN CW 603 N                                      |
| S                                                    | 2.4 Kupfer-Aluminium-Legierungen (Alubronze, langspanend)           | Copper-aluminium alloys (alu bronze, long-chipping)                   | ≤ 800 N/mm <sup>2</sup>                 | CuAl10Ni5Fe4 EN CW 307 G                                          |
|                                                      | 2.5 Kupfer-Zinn-Legierungen (Zinnbronze, langspanend)               | Copper-tin alloys (tin bronze, long-chipping)                         | ≤ 700 N/mm <sup>2</sup>                 | CuSn8P EN CW 459 K                                                |
|                                                      | 2.6 Kupfer-Zinn-Legierungen (Zinnbronze, kurzspanend)               | Copper-tin alloys (tin bronze, short-chipping)                        | ≤ 400 N/mm <sup>2</sup>                 | CuSn7 ZnPb (Rg7) 2.1090                                           |
|                                                      | 2.7 Kupfer-Sonderlegierungen                                        | Special copper alloys                                                 | ≤ 600 N/mm <sup>2</sup>                 | (AMPCO® 8)                                                        |
| H                                                    | 2.8 Kupfer-Sonderlegierungen                                        | Special copper alloys                                                 | ≤ 1400 N/mm <sup>2</sup>                | (AMPCO® 45)                                                       |
|                                                      | <b>Magnesium-Legierungen</b>                                        | <b>Magnesium alloys</b>                                               |                                         |                                                                   |
|                                                      | 3.1 Magnesium-Knetlegierungen                                       | Magnesium wrought alloys                                              | ≤ 500 N/mm <sup>2</sup>                 | MgAl6Zn 3.5612                                                    |
|                                                      | 3.2 Magnesium-Gusslegierungen                                       | Magnesium cast alloys                                                 | ≤ 500 N/mm <sup>2</sup>                 | EN-MCMgAl9Zn1 EN-MC21120                                          |
| H                                                    | <b>Kunststoffe</b>                                                  | <b>Synthetic</b>                                                      |                                         |                                                                   |
|                                                      | 4.1 Duroplaste (kurzspanend)                                        | Duroplastics (short-chipping)                                         |                                         | Bakelit, Pertinax                                                 |
|                                                      | 4.2 Thermoplaste (langspanend)                                      | Thermoplastics (long-chipping)                                        |                                         | PMMA, POM, PVC                                                    |
|                                                      | 4.3 Faserverstärkte Kunststoffe (Faseranteil ≤ 30%)                 | Fibre-reinforced synthetics (fibre content ≤ 30%)                     |                                         | GFK, CFK, AFK                                                     |
| H                                                    | 4.4 Faserverstärkte Kunststoffe (Faseranteil > 30%)                 | Fibre-reinforced synthetics (fibre content > 30%)                     |                                         | GFK, CFK, AFK                                                     |
|                                                      | <b>Besondere Werkstoffe</b>                                         | <b>Special materials</b>                                              |                                         |                                                                   |
|                                                      | 5.1 Grafit                                                          | Graphite                                                              |                                         | C 8000                                                            |
|                                                      | 5.2 Wolfram-Kupfer-Legierungen                                      | Tungsten-copper alloys                                                |                                         | W-Cu 80/20                                                        |
|                                                      | 5.3 Verbundwerkstoffe                                               | Composite materials                                                   |                                         | Hyllite, Alucobond                                                |
| S                                                    | <b>Spezialwerkstoffe</b>                                            | <b>Special materials</b>                                              |                                         |                                                                   |
|                                                      | <b>Titan-Legierungen</b>                                            | <b>Titanium alloys</b>                                                |                                         |                                                                   |
|                                                      | 1.1 Reintitan                                                       | Pure titanium                                                         | ≤ 450 N/mm <sup>2</sup>                 | Ti1 3.7025                                                        |
|                                                      | 1.2 Titan-Legierungen                                               | Titanium alloys                                                       | ≤ 900 N/mm <sup>2</sup>                 | TiAl6V4 3.7165                                                    |
| H                                                    | 1.3 Titan-Legierungen                                               | Titanium alloys                                                       | ≤ 1250 N/mm <sup>2</sup>                | TiAl4Mo4Sn2 3.7185                                                |
|                                                      | <b>Nickel-, Kobalt- und Eisen-Legierungen</b>                       | <b>Nickel alloys, cobalt alloys and iron alloys</b>                   |                                         |                                                                   |
|                                                      | 2.1 Reinnickel                                                      | Pure nickel                                                           | ≤ 600 N/mm <sup>2</sup>                 | Ni 99.6 2.4060                                                    |
|                                                      | 2.2 Nickel-Basis-Legierungen                                        | Nickel-base alloys                                                    | ≤ 1000 N/mm <sup>2</sup>                | Monel 400 2.4360                                                  |
| H                                                    | 2.3 Nickel-Basis-Legierungen                                        | Nickel-base alloys                                                    | ≤ 1600 N/mm <sup>2</sup>                | Inconel 718 2.4668                                                |
|                                                      | 2.4 Kobalt-Basis-Legierungen                                        | Cobalt-base alloys                                                    | ≤ 1000 N/mm <sup>2</sup>                | Udimet 605                                                        |
|                                                      | 2.5 Eisen-Basis-Legierungen                                         | Iron-base alloys                                                      | ≤ 1600 N/mm <sup>2</sup>                | Haynes 25 2.4964                                                  |
|                                                      | 2.6 Eisen-Basis-Legierungen                                         | Iron-base alloys                                                      | ≤ 1500 N/mm <sup>2</sup>                | Incoloy 800 1.4958                                                |
| H                                                    | <b>Harte Werkstoffe</b>                                             | <b>Hard materials</b>                                                 |                                         |                                                                   |
|                                                      | 1.1 Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 44 - 50 HRC                             | Weldox 1100                                                       |
|                                                      | 1.2 Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 50 - 55 HRC                             | Hardox 550                                                        |
|                                                      | 1.3 Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 55 - 60 HRC                             | Armox 600T                                                        |
| H                                                    | 1.4 Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 60 - 63 HRC                             | Ferro-Titanit                                                     |
|                                                      | 1.5 Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 63 - 66 HRC                             | HSSE                                                              |

|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              | Product Finder                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------|------------------------------|--------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              | V <sub>c</sub>                                                                                                                               |
| Rekord A-STEEL                                                                                               | Rekord B-STEEL-L                                                                                             | Rekord B-STEEL-L TIN         | Rekord B-STEEL-L GLT-1       | Rekord B-STEEL-H PM-ALCR-102 | Rekord B-STEEL-H PM-ALCR-101                                                                                 | Rekord D-STEEL               | Rekord D-STEEL/E             | Rekord DF-STEEL TIN                                                                                              | Enorm STEEL                         | Enorm STEEL TIN                                         |                              | M                                                                                                                                            |
| C / 2-3                                                                                                      | B / 4-5                                                                                                      | B / 4-5                      | B / 4-5                      | B ≈ 6                        | B ≈ 6                                                                                                        | C / 2-3                      | E / 1,5-2                    | C / 2-3                                                                                                          | C / 2-3                             | C / 2-3                                                 |                              | MF                                                                                                                                           |
| max. 2 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> |                              |                              |                              | max. 2 x d <sub>1</sub><br> |                              |                              | max. 2,5 x d <sub>1</sub><br> |                                     | Gewindetiefe und Lochform<br>Thread depth and hole type |                              | UNC UN-8                                                                                                                                     |
| 92,120,150<br>162,168,194                                                                                    | 92,117,120,143,150<br>162,168<br>204,208<br>216,220                                                          | 92,120<br>162,168            | 92                           | 94,122<br>163,171            | 94,122<br>163,171                                                                                            | 94,122,150<br>172            | 94,117,122,143<br>172        | 95,117,123,143                                                                                                   | 95,123<br>172<br>204,208<br>216,220 | 95,123<br>172<br>204,208<br>216,220<br>212<br>233       |                              | M<br>MF<br>UNC<br>UNF<br>G, Rp<br>NPSM, NPSF<br>NPT, NPTF<br>Rc, W<br>BSW, BSF<br>Pg<br>MJ<br>UNJC, UNJF<br>EG (STI)<br>LK-M<br>Tr, Tr-F, Rd |
| 224<br>228<br>232,238,243<br>246,247                                                                         | 232                                                                                                          | 232                          |                              |                              |                                                                                                              | 232                          | 228<br>233                   | 233                                                                                                              | 233                                 | 267                                                     |                              | vc [m/min]                                                                                                                                   |
| 270,271<br>273                                                                                               |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
| min. empf. max.<br>rec. rec.                                                                                 | min. empf. max.<br>rec. rec.                                                                                 | min. empf. max.<br>rec. rec. | min. empf. max.<br>rec. rec. | min. empf. max.<br>rec. rec. | min. empf. max.<br>rec. rec.                                                                                 | min. empf. max.<br>rec. rec. | min. empf. max.<br>rec. rec. | min. empf. max.<br>rec. rec.                                                                                     | min. empf. max.<br>rec. rec.        | min. empf. max.<br>rec. rec.                            | min. empf. max.<br>rec. rec. |                                                                                                                                              |
|                                                                                                              | 5 <b>15</b> 25                                                                                               | 15 <b>25</b> 45              | 15 <b>25</b> 45              |                              |                                                                                                              |                              | 5 <b>10</b> 20               | 5 <b>10</b> 20                                                                                                   | 5 <b>15</b> 20                      | 2 <b>8</b> 15                                           | 5 <b>15</b> 25               | <b>P</b>                                                                                                                                     |
|                                                                                                              | 5 <b>10</b> 20                                                                                               | 10 <b>20</b> 40              | 10 <b>20</b> 40              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              | 2 <b>8</b> 15                                                                                                | 5 <b>15</b> 25               | 5 <b>15</b> 25               | 15 <b>35</b> 45              | 15 <b>35</b> 45                                                                                              | 2 <b>8</b> 15                | 2 <b>8</b> 15                | 5 <b>15</b> 20                                                                                                   | 2 <b>8</b> 15                       | 5 <b>15</b> 25                                          |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              | 5 <b>10</b> 15               | 5 <b>10</b> 15               | 15 <b>35</b> 45              | 15 <b>35</b> 45                                                                                              |                              |                              | 5 <b>10</b> 15                                                                                                   |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              | 5 <b>10</b> 15               | 5 <b>10</b> 15                                                                                               |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              | <b>M</b>                                                                                                                                     |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
| 5 <b>15</b> 25                                                                                               |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              | <b>K</b>                                                                                                                                     |
| 5 <b>15</b> 25                                                                                               |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
| 5 <b>10</b> 20                                                                                               |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
| 5 <b>10</b> 20                                                                                               |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
| 5 <b>10</b> 20                                                                                               |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
| 5 <b>10</b> 20                                                                                               |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
| 5 <b>10</b> 20                                                                                               |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
| 5 <b>10</b> 20                                                                                               |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              | <b>N</b>                                                                                                                                     |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              | <b>S</b>                                                                                                                                     |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              | <b>H</b>                                                                                                                                     |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |
|                                                                                                              |                                                                                                              |                              |                              |                              |                                                                                                              |                              |                              |                                                                                                                  |                                     |                                                         |                              |                                                                                                                                              |

vc in m/min



| Product Finder      | EMUGE<br>VA                                                                                                  |                                                                                  |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      | EMUGE<br>INOX |            |      |    |
|---------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------|---------------|------------|------|----|
|                     |                              |  |  |                                |  |                                  |  |  |                                |      |               |            |      |    |
| M                   | Rekord B-VA NT                                                                                               | Rekord B-VA TIN                                                                  | Rekord B-VA GLT-1                                                                | Enorm VA                                                                                                       | Robust 2X-VA NE2                                                                 | Robust 2X-VA TIN                                                                                                 | Robust 2ST-VA NE2                                                                | Robust 2ST-VA TIN                                                                  | Enorm INOX GLT-201                                                                                               |      |               |            |      |    |
| MF                  |                             | B / 4-5                                                                          | B / 4-5                                                                          | C / 2-3                                                                                                        | C / 2-3                                                                          | C / 2-3                                                                                                          | C / 2-3                                                                          | C / 2-3                                                                            | C / 2-3                                                                                                          |      |               |            |      |    |
| UNC UN-8            | max. 3 x d <sub>1</sub><br> |                                                                                  |                                                                                  | max. 2,5 x d <sub>1</sub><br> |                                                                                  | max. 1,5 x d <sub>1</sub><br> |                                                                                  |                                                                                    | max. 2,5 x d <sub>1</sub><br> |      |               |            |      |    |
| UNF UNEF            | M 95,118,123,144,151<br>MF 174<br>UNC 205,209<br>UNF 217,221                                                 | 95,123<br>163,174<br>205,209<br>217,221                                          | 95,118,123,144<br>163,174<br>205,209<br>217,221                                  | 97,118,125,144<br>175<br>205,209<br>217,221                                                                    | 148<br>190                                                                       | 148<br>190                                                                                                       | 149<br>192                                                                       | 149<br>192                                                                         | 98,126<br>175<br>205,209<br>217,221                                                                              |      |               |            |      |    |
| G, Rp NPSM, NPSF    |                                                                                                              |                                                                                  |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    | 234                                                                                                              |      |               |            |      |    |
| NPT, NPTF Rc, W     |                                                                                                              |                                                                                  |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
| BSW, BSF            |                                                                                                              |                                                                                  | 266,267                                                                          |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
| Pg                  |                                                                                                              |                                                                                  |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
| MJ UNJC, UNJF       |                                                                                                              |                                                                                  |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
| EG (STI)            |                                                                                                              |                                                                                  |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
| SELF-LOCK           |                                                                                                              |                                                                                  |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
| Tr, Tr-F Rd         |                                                                                                              |                                                                                  |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
| Zubehör Accessories |                                                                                                              |                                                                                  |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
| P                   | v <sub>c</sub> [m/min]                                                                                       | min.                                                                             | empf. rec.                                                                       | max.                                                                                                           | min.                                                                             | empf. rec.                                                                                                       | max.                                                                             | min.                                                                               | empf. rec.                                                                                                       | max. | min.          | empf. rec. | max. |    |
|                     |                                                                                                              | 1.1                                                                              |                                                                                  |                                                                                                                | 15                                                                               | 25                                                                                                               | 45                                                                               | 15                                                                                 | 25                                                                                                               | 45   | 5             | 15         | 25   |    |
|                     |                                                                                                              | 2.1                                                                              | 5                                                                                | 10                                                                                                             | 20                                                                               | 10                                                                                                               | 20                                                                               | 40                                                                                 | 10                                                                                                               | 20   | 40            | 5          | 10   | 20 |
|                     |                                                                                                              | 3.1                                                                              | 2                                                                                | 8                                                                                                              | 15                                                                               | 5                                                                                                                | 15                                                                               | 25                                                                                 | 5                                                                                                                | 15   | 25            | 2          | 8    | 15 |
|                     |                                                                                                              | 4.1                                                                              |                                                                                  |                                                                                                                | 5                                                                                | 10                                                                                                               | 15                                                                               |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 5.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
| M                   | v <sub>c</sub> [m/min]                                                                                       | 1.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 2.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      | 5             | 8          | 12   |    |
|                     |                                                                                                              | 3.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      | 2             | 5          | 8    |    |
|                     |                                                                                                              | 4.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              |                                                                                  |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
| K                   | v <sub>c</sub> [m/min]                                                                                       | 1.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  | 2                                                                                  | 5                                                                                                                | 10   | 2             | 5          | 10   |    |
|                     |                                                                                                              | 1.2                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  | 2                                                                                  | 5                                                                                                                | 10   | 2             | 5          | 10   |    |
|                     |                                                                                                              | 2.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  | 2                                                                                  | 3                                                                                                                | 8    | 2             | 3          | 8    |    |
|                     |                                                                                                              | 2.2                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  | 2                                                                                  | 3                                                                                                                | 8    | 2             | 3          | 8    |    |
|                     |                                                                                                              | 3.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  | 2                                                                                  | 3                                                                                                                | 8    | 2             | 3          | 8    |    |
|                     |                                                                                                              | 3.2                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  | 2                                                                                  | 3                                                                                                                | 8    | 2             | 3          | 8    |    |
|                     |                                                                                                              | 4.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  | 2                                                                                  | 5                                                                                                                | 10   | 2             | 5          | 10   |    |
|                     |                                                                                                              | 4.2                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  | 2                                                                                  | 5                                                                                                                | 10   | 2             | 5          | 10   |    |
|                     |                                                                                                              |                                                                                  |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              |                                                                                  |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
| N                   | v <sub>c</sub> [m/min]                                                                                       | 1.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 1.2                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 1.3                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 1.4                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 1.5                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 1.6                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 2.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 2.2                                                                              | 10                                                                               | 20                                                                                                             | 40                                                                               |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 2.3                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 2.4                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 2.5                                                                              | 2                                                                                | 5                                                                                                              | 10                                                                               |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 2.6                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 2.7                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 2.8                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 3.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 3.2                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 4.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 4.2                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 4.3                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 4.4                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
| S                   | v <sub>c</sub> [m/min]                                                                                       | 1.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 1.2                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 1.3                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 2.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 2.2                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 2.3                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 2.4                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
| H                   | v <sub>c</sub> [m/min]                                                                                       | 1.1                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 1.2                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 1.3                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 1.4                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |
|                     |                                                                                                              | 1.5                                                                              |                                                                                  |                                                                                                                |                                                                                  |                                                                                                                  |                                                                                  |                                                                                    |                                                                                                                  |      |               |            |      |    |

| EMUGE<br>GG             |                        | EMUGE<br>GJV               |                                    |                                     |                              |                                      |                                       |                                    |                                      | EMUGE<br>AL             | Product<br>Finder                                             |
|-------------------------|------------------------|----------------------------|------------------------------------|-------------------------------------|------------------------------|--------------------------------------|---------------------------------------|------------------------------------|--------------------------------------|-------------------------|---------------------------------------------------------------|
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         |                                                               |
| Rekord<br>A-GG<br>NT    | Rekord<br>A-GG<br>TiCN | Rekord<br>A-GJV<br>PM-TiCN | Rekord<br>A-GJV-<br>IKZ<br>PM-TiCN | Rekord<br>A-GJV-<br>IKZN<br>PM-TiCN | Rekord<br>A-GJV/E<br>PM-TiCN | Rekord<br>A-GJV/E-<br>IKZ<br>PM-TiCN | Rekord<br>A-GJV/E-<br>IKZN<br>PM-TiCN | HM-Rekord<br>A-GJV-<br>IKZ<br>TiCN | HM-Rekord<br>A-GJV/E-<br>IKZ<br>TiCN | Rekord<br>B-AL          | M                                                             |
| C / 2-3                 | C / 2-3                | C / 2-3                    | C / 2-3                            | C / 2-3                             | E / 1,5-2                    | E / 1,5-2                            | E / 1,5-2                             | C / 2-3                            | E / 1,5-2                            | B / ≈3                  | MF                                                            |
| max. 2 x d <sub>1</sub> |                        | max. 2 x d <sub>1</sub>    |                                    | max. 2 x d <sub>1</sub>             |                              | max. 2 x d <sub>1</sub>              |                                       | max. 2 x d <sub>1</sub>            |                                      | max. 3 x d <sub>1</sub> | Gewindetiefe<br>und Lochform<br>Thread depth<br>and hole type |
| 98,126<br>176           | 98,126<br>176          | 99,127<br>176              | 99,127<br>177                      | 99,127<br>177                       | 99,127<br>177                | 99,127<br>177                        | 99,127<br>177                         | 99,127<br>177                      | 99,127<br>177                        | 100,128                 | M<br>MF<br>UNC<br>UNF<br>UNE<br>UN-8                          |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | G, Rp<br>NPSM, NPSF                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | NPT, NPTF<br>Rc, W                                            |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | BSW, BSF<br>Pg<br>MJ                                          |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | UNJC, UNJF<br>EG (STI)<br>LK-M                                |
| 290,292                 |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      | 280                     | Tr, Tr-F, Rd                                                  |
| min. empf.<br>rec.      | min. empf.<br>rec.     | min. empf.<br>rec.         | min. empf.<br>rec.                 | min. empf.<br>rec.                  | min. empf.<br>rec.           | min. empf.<br>rec.                   | min. empf.<br>rec.                    | min. empf.<br>rec.                 | min. empf.<br>rec.                   | min. empf.<br>rec.      | V <sub>c</sub> [m/min]                                        |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 3.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 4.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 5.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 3.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 4.1                                                           |
| 10 15 25                | 15 30 45               | 15 45 60                   | 15 45 60                           | 15 45 60                            | 15 45 60                     | 15 45 60                             | 15 45 60                              | 40 60 80                           | 40 60 80                             |                         | 1.1                                                           |
| 10 15 20                | 10 25 40               | 10 40 60                   | 10 40 60                           | 10 40 60                            | 10 40 60                     | 10 40 60                             | 10 40 60                              | 30 45 60                           | 30 45 60                             |                         | 1.2                                                           |
|                         |                        | 10 30 60                   | 10 30 60                           | 10 30 60                            | 10 30 60                     | 10 30 60                             | 10 30 60                              | 30 45 60                           | 30 45 60                             |                         | 2.1                                                           |
|                         |                        | 10 20 40                   | 10 20 40                           | 10 20 40                            | 10 20 40                     | 10 20 40                             | 10 20 40                              | 10 20 40                           | 10 20 40                             |                         | 2.2                                                           |
|                         |                        | 10 30 60                   | 10 30 60                           | 10 30 60                            | 10 30 60                     | 10 30 60                             | 10 30 60                              | 20 30 40                           | 20 30 40                             |                         | 3.1                                                           |
|                         |                        | 10 30 60                   | 10 30 60                           | 10 30 60                            | 10 30 60                     | 10 30 60                             | 10 30 60                              | 20 30 40                           | 20 30 40                             |                         | 3.2                                                           |
|                         |                        | 15 30 45                   | 15 30 45                           | 15 30 45                            | 15 30 45                     | 15 30 45                             | 15 30 45                              | 40 60 80                           | 40 60 80                             |                         | 4.1                                                           |
|                         |                        | 15 30 45                   | 15 30 45                           | 15 30 45                            | 15 30 45                     | 15 30 45                             | 15 30 45                              | 30 45 60                           | 30 45 60                             |                         | 4.2                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.2                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.3                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      | 5 15 25                 | 1.4                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.5                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.6                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.2                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.3                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.4                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.5                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.6                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.7                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.8                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 3.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 3.2                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 4.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 4.2                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 4.3                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 4.4                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 5.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 5.2                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 5.3                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.2                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.3                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.2                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.3                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.4                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.5                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.6                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.2                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.3                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.2                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.3                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.4                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.5                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 2.6                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.1                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.2                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.3                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.4                                                           |
|                         |                        |                            |                                    |                                     |                              |                                      |                                       |                                    |                                      |                         | 1.5                                                           |

1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

| Product Finder                 | EMUGE<br>AL                                                                                                  |                                                                                                                |                                                                                  |                                                                                  | EMUGE<br>GAL                                                                                                 |                                                                                                              |                                                                                                                |                                                                                    | EMUGE<br>MG                                                                                                    | EMUGE<br>FK                                                                                                    |                                                                                                                |      |
|--------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------|
|                                |                              |                                |  |  |                              |                              |                                |  |                              |                              |                              |      |
| M                              | Rekord B-AL GLT-104                                                                                          | Enorm AL                                                                                                       | Enorm AL GLT-104                                                                 | Enorm AL/E GLT-104                                                               | Rekord A-GAL/E-IKZ TiCN                                                                                      | Rekord A-GAL/E-IKZN TiCN                                                                                     | Rekord D-GAL/E-IKZ TiCN                                                                                        | HM-Rekord D-GAL/E-IKZ TiCN                                                         | Rekord A-MG GLT-1                                                                                              | Rekord A-FK NT                                                                                                 | HM-Rekord A-FK-IKZ                                                                                             |      |
| MF                             |  B / ≈ 3                    | C / 2-3                                                                                                        | C / 2-3                                                                          | E / 1,5-2                                                                        | E / 1,5-2                                                                                                    | E / 1,5-2                                                                                                    | E / 1,5-2                                                                                                      | E / 1,5-2                                                                          | C / 2-3                                                                                                        | C / 2-3                                                                                                        | C / 2-3                                                                                                        |      |
| UNC UN-8                       | max. 3 x d <sub>1</sub><br> | max. 2,5 x d <sub>1</sub><br> |                                                                                  |                                                                                  | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> |                                                                                    | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> |      |
| UNF UNEF                       | 100, 128                                                                                                     | 100, 128<br>178                                                                                                | 100, 128                                                                         | 101                                                                              | 101                                                                                                          | 101                                                                                                          | 101                                                                                                            | 101                                                                                | 101                                                                                                            | 102                                                                                                            | 102                                                                                                            |      |
| G, Rp NPSM, NPSF               | Seite · Page                                                                                                 |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
| NPT, NPTF Rc, W                |                                                                                                              |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
| BSW, BSF                       |                                                                                                              |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
| Pg MJ UNJC, UNJF EG (STI) LK-M |                                                                                                              |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
| Pg                             | 280                                                                                                          |                                                                                                                | 274<br>276, 278<br>281, 282, 284, 287<br>291                                     |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
| MJ UNJC, UNJF                  |                                                                                                              |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
| Tr, Tr-F, Rd                   |                                                                                                              |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
| Zubehör Accessories            |                                                                                                              |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
| P                              | v <sub>c</sub> [m/min]                                                                                       |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | min.                                                                                                         | empf. rec.                                                                                                     | max.                                                                             | min.                                                                             | empf. rec.                                                                                                   | max.                                                                                                         | min.                                                                                                           | empf. rec.                                                                         | max.                                                                                                           | min.                                                                                                           | empf. rec.                                                                                                     | max. |
|                                | 1.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 2.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 3.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 4.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
| M                              | v <sub>c</sub> [m/min]                                                                                       |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | min.                                                                                                         | empf. rec.                                                                                                     | max.                                                                             | min.                                                                             | empf. rec.                                                                                                   | max.                                                                                                         | min.                                                                                                           | empf. rec.                                                                         | max.                                                                                                           | min.                                                                                                           | empf. rec.                                                                                                     | max. |
|                                | 1.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 2.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 3.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 4.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
| K                              | v <sub>c</sub> [m/min]                                                                                       |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | min.                                                                                                         | empf. rec.                                                                                                     | max.                                                                             | min.                                                                             | empf. rec.                                                                                                   | max.                                                                                                         | min.                                                                                                           | empf. rec.                                                                         | max.                                                                                                           | min.                                                                                                           | empf. rec.                                                                                                     | max. |
|                                | 1.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                | 40                                                                                                             | 60   |
|                                | 1.2                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                | 30                                                                                                             | 45   |
|                                | 2.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                | 30                                                                                                             | 45   |
|                                | 2.2                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                | 10                                                                                                             | 20   |
|                                | 3.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                | 20                                                                                                             | 30   |
|                                | 3.2                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                | 20                                                                                                             | 30   |
|                                | 4.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                | 40                                                                                                             | 60   |
|                                | 4.2                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                | 30                                                                                                             | 45   |
| N                              | v <sub>c</sub> [m/min]                                                                                       |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | min.                                                                                                         | empf. rec.                                                                                                     | max.                                                                             | min.                                                                             | empf. rec.                                                                                                   | max.                                                                                                         | min.                                                                                                           | empf. rec.                                                                         | max.                                                                                                           | min.                                                                                                           | empf. rec.                                                                                                     | max. |
|                                | 1.1                                                                                                          | 15                                                                                                             | 25                                                                               | 40                                                                               |                                                                                                              |                                                                                                              | 15                                                                                                             | 25                                                                                 | 40                                                                                                             |                                                                                                                |                                                                                                                |      |
|                                | 1.2                                                                                                          | 15                                                                                                             | 25                                                                               | 40                                                                               |                                                                                                              |                                                                                                              | 15                                                                                                             | 25                                                                                 | 40                                                                                                             |                                                                                                                |                                                                                                                |      |
|                                | 1.3                                                                                                          | 15                                                                                                             | 25                                                                               | 40                                                                               |                                                                                                              |                                                                                                              | 15                                                                                                             | 25                                                                                 | 40                                                                                                             |                                                                                                                |                                                                                                                |      |
|                                | 1.4                                                                                                          | 15                                                                                                             | 25                                                                               | 40                                                                               | 5                                                                                                            | 15                                                                                                           | 25                                                                                                             | 15                                                                                 | 25                                                                                                             | 40                                                                                                             |                                                                                                                |      |
|                                | 1.5                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 1.6                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              | 30                                                                                                             | 50                                                                                 | 80                                                                                                             | 30                                                                                                             | 50                                                                                                             | 80   |
|                                |                                                                                                              |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              | 10                                                                                                             | 20                                                                                 | 30                                                                                                             | 10                                                                                                             | 20                                                                                                             | 30   |
|                                | 2.1                                                                                                          | 5                                                                                                              | 15                                                                               | 30                                                                               |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 2.2                                                                                                          |                                                                                                                |                                                                                  |                                                                                  | 5                                                                                                            | 15                                                                                                           | 30                                                                                                             | 5                                                                                  | 15                                                                                                             | 30                                                                                                             |                                                                                                                |      |
|                                | 2.3                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 2.4                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 2.5                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 2.6                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                | 10                                                                                                             | 20   |
|                                | 2.7                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                | 5                                                                                                              | 10   |
|                                | 2.8                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                | 1                                                                                                              | 5    |
|                                | 3.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    | 20                                                                                                             | 40                                                                                                             | 60                                                                                                             |      |
|                                | 3.2                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    | 20                                                                                                             | 40                                                                                                             | 60                                                                                                             |      |
|                                | 4.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                | 5                                                                                                              | 10                                                                                                             | 25   |
|                                | 4.2                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                | 20                                                                                                             | 40   |
|                                | 4.3                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                | 2                                                                                                              | 7                                                                                                              | 10   |
|                                | 4.4                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                | 10                                                                                                             | 15   |
|                                | 5.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                | 20                                                                                                             | 40   |
|                                | 5.2                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                | 5                                                                                                              | 10   |
|                                | 5.3                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                | 20   |
| S                              | v <sub>c</sub> [m/min]                                                                                       |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | min.                                                                                                         | empf. rec.                                                                                                     | max.                                                                             | min.                                                                             | empf. rec.                                                                                                   | max.                                                                                                         | min.                                                                                                           | empf. rec.                                                                         | max.                                                                                                           | min.                                                                                                           | empf. rec.                                                                                                     | max. |
|                                | 1.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 1.2                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 1.3                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 2.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 2.2                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
| H                              | v <sub>c</sub> [m/min]                                                                                       |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | min.                                                                                                         | empf. rec.                                                                                                     | max.                                                                             | min.                                                                             | empf. rec.                                                                                                   | max.                                                                                                         | min.                                                                                                           | empf. rec.                                                                         | max.                                                                                                           | min.                                                                                                           | empf. rec.                                                                                                     | max. |
|                                | 1.1                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 1.2                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |
|                                | 1.3                                                                                                          |                                                                                                                |                                                                                  |                                                                                  |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                    |                                                                                                                |                                                                                                                |                                                                                                                |      |

| EMUGE<br>PVC                                                                                                              |                                                                                                                         | EMUGE<br>MS                                                                                                             |                                                                                  | EMUGE<br>Ti                                                                                                             |                                                                                  |                                                                                                                         |                                                                                                                         | EMUGE<br>TILEG                                                                                                            |                                                                                                                           | EMUGE<br>NI                                                                                                               |                                                                                                                                                      | EMUGE<br>H                                                                                                                                                             |  | Product<br>Finder |
|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------|
|                                           |                                         |                                         |  |                                         |  |                                         |                                         |                                         |                                         |                                         |                                                                                                                                                      |                                                                                                                                                                        |  |                   |
| Rekord<br>D-PVC/E<br>CRN                                                                                                  | Rekord<br>A-MS                                                                                                          | Rekord<br>C-Ti<br>NT2                                                                                                   | Rekord<br>C-Ti<br>TiCN                                                           | Rekord<br>D-Ti<br>NT2                                                                                                   | Rekord<br>D-Ti<br>TiCN                                                           | Rekord<br>DF-TILEG<br>TiCN                                                                                              | Rekord<br>C-Ni<br>PM-TiCN                                                                                               | Rekord<br>DF-Ni<br>PM-TiCN                                                                                                | Rekord<br>A-H<br>NT                                                                                                       | Rekord<br>A-H<br>TiCN                                                                                                     | <br>Gewindetiefe<br>und Lochform<br>Thread depth<br>and hole type | M<br>MF<br>UNC<br>UNF<br>G, Rp<br>NPSM, NPSF<br>NPT, NPTF<br>Rc, W<br>BSW, BSF<br>Pg<br>MJ<br>UNJC, UNJF<br>EG (STI)<br>LK-M<br>Tr, Tr-F, Rd<br>V <sub>c</sub> [m/min] |  |                   |
| E / 1,5-2<br>max. 2 x d <sub>1</sub><br> | C / 2-3<br>max. 2 x d <sub>1</sub><br> | D / 4-5<br>max. 3 x d <sub>1</sub><br> |                                                                                  | D / 4-5<br>max. 2 x d <sub>1</sub><br> |                                                                                  | C / 2-3<br>max. 2 x d <sub>1</sub><br> | D / 4-5<br>max. 3 x d <sub>1</sub><br> | C / 2-3<br>max. 2 x d <sub>1</sub><br> | C / 2-3<br>max. 2 x d <sub>1</sub><br> | C / 2-3<br>max. 2 x d <sub>1</sub><br> |                                                                                                                                                      |                                                                                                                                                                        |  |                   |
| 102                                                                                                                       | 103,151                                                                                                                 | 103,129                                                                                                                 | 103,129                                                                          | 103,129                                                                                                                 | 103,129                                                                          | 103                                                                                                                     | 104,129                                                                                                                 | 104,129                                                                                                                   | 104,119,130,145<br>163,178<br>205,209<br>217,221                                                                          | 105,130<br>178                                                                                                            |                                                                                                                                                      |                                                                                                                                                                        |  |                   |
|                                                                                                                           | 264                                                                                                                     |                                                                                                                         |                                                                                  |                                                                                                                         | 274<br>276,278                                                                   |                                                                                                                         | 275<br>277,279                                                                                                          | 275<br>277,279                                                                                                            | 273                                                                                                                       |                                                                                                                           |                                                                                                                                                      |                                                                                                                                                                        |  |                   |
| min. empf. max.<br>rec. rec.                                                                                              | min. empf. max.<br>rec. rec.                                                                                            | min. empf. max.<br>rec. rec.                                                                                            | min. empf. max.<br>rec. rec.                                                     | min. empf. max.<br>rec. rec.                                                                                            | min. empf. max.<br>rec. rec.                                                     | min. empf. max.<br>rec. rec.                                                                                            | min. empf. max.<br>rec. rec.                                                                                            | min. empf. max.<br>rec. rec.                                                                                              | min. empf. max.<br>rec. rec.                                                                                              | min. empf. max.<br>rec. rec.                                                                                              |                                                                                                                                                      |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 1.1                                                                                                                                                  | P                                                                                                                                                                      |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 2.1                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 3.1                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         | 2 5 10                                                                                                                  | 5 10 15                                                                          | 2 5 10                                                                                                                  | 5 10 15                                                                          |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 4.1                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         | 1 3 5                                                                                                                   | 2 5 10                                                                           | 1 3 5                                                                                                                   | 2 5 10                                                                           |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 5.1                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 1.1                                                                                                                                                  | M                                                                                                                                                                      |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 2.1                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         | 1 4 8                                                                                                                   | 2 5 8                                                                            | 1 4 8                                                                                                                   | 2 5 8                                                                            |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 3.1                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         | 1 3 5                                                                                                                   | 2 5 8                                                                            | 1 3 5                                                                                                                   | 2 5 8                                                                            |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 4.1                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           |                                                                                                                                                      |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           | 10 15 25                                                                                                                  | 15 30 45                                                                                                                  | 1.1                                                                                                                                                  | K                                                                                                                                                                      |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           | 10 15 25                                                                                                                  | 15 30 45                                                                                                                  | 1.2                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           | 10 15 25                                                                                                                  | 15 30 45                                                                                                                  | 2.1                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           | 5 10 15                                                                                                                   | 10 20 40                                                                                                                  | 2.2                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           | 5 10 15                                                                                                                   | 15 30 45                                                                                                                  | 3.1                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           | 5 10 15                                                                                                                   | 15 30 45                                                                                                                  | 3.2                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           | 10 15 25                                                                                                                  | 10 20 30                                                                                                                  | 4.1                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           | 10 15 25                                                                                                                  | 10 20 30                                                                                                                  | 4.2                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 1.1                                                                                                                                                  | N                                                                                                                                                                      |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 1.2                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 1.3                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 1.4                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           | 30 50 80                                                                                                                  | 1.5                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           | 10 20 30                                                                                                                  | 1.6                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 2.1                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 2.2                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 2.3                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 2.4                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 2.5                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           | 10 20 30                                                                                                                  | 2.6                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 2.7                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 2.8                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 3.1                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 3.2                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 4.1                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           | 5 10 25                                                                                                                   | 10 20 40                                                                                                                  | 4.2                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 4.3                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 4.4                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 5.1                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 5.2                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 5.3                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 1.1                                                                                                                                                  | S                                                                                                                                                                      |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 1.2                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 1.3                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 2.1                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 2.2                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 2.3                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 2.4                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 2.5                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 2.6                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 1.1                                                                                                                                                  | H                                                                                                                                                                      |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 1.2                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 1.3                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 1.4                                                                                                                                                  |                                                                                                                                                                        |  |                   |
|                                                                                                                           |                                                                                                                         |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                           |                                                                                                                           |                                                                                                                           | 1.5                                                                                                                                                  |                                                                                                                                                                        |  |                   |

1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

| Product Finder         | EMUGE<br>H                                                                                                   |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  | EMUGE<br>HCUT                                                                                                  |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    | EMUGE<br>Z                                                                                                     |
|------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
|                        |                              |  |                              |                              |  |                                |  |                                |                                |  |                              |
| M                      | Rekord A-H-IKZ NT                                                                                            | Rekord A-H-IKZ TiCN                                                              | Rekord A-H-IKZN TiCN                                                                                         | HM-Rekord A-H-IKZ                                                                                            | HM-Rekord A-H/E-IKZ                                                              | Rekord A-HCUT PM-TiCN                                                                                          | HM-Rekord A-HCUT/D TiCN                                                           | HM-Rekord A-HCUT/D-IKZ TiCN                                                                                      | HM-Rekord A-HCUT/C TiCN                                                                                          | HM-Rekord A-HCUT/C-IKZ TiCN                                                        | Rekord A-Z TiCN                                                                                                |
| MF                     | C / 2-3                                                                                                      | C / 2-3                                                                          | C / 2-3                                                                                                      | C / 2-3                                                                                                      | E / 1,5-2                                                                        | C / 2-3                                                                                                        | D / 4-5                                                                           | D / 4-5                                                                                                          | C / 2-3                                                                                                          | C / 2-3                                                                            | C / 2-3                                                                                                        |
| UNC<br>UN-8            | max. 2 x d <sub>1</sub><br> |                                                                                  | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> |                                                                                  | max. 1,5 x d <sub>1</sub><br> |                                                                                   | max. 1,5 x d <sub>1</sub><br> | max. 1,5 x d <sub>1</sub><br> |                                                                                    | max. 2 x d <sub>1</sub><br> |
| UNF<br>UNEF            | 105,130<br>179                                                                                               | 105,130<br>179                                                                   | 105,131<br>179                                                                                               | 105,131<br>163,179                                                                                           |                                                                                  | 105,131<br>164,179                                                                                             | 106<br>165                                                                        | 132                                                                                                              | 106<br>165                                                                                                       | 132                                                                                | 107,133<br>180                                                                                                 |
| G, Rp<br>NPSM, NPSF    |                                                                                                              |                                                                                  |                                                                                                              |                                                                                                              | 235                                                                              | 230,235                                                                                                        | 231                                                                               |                                                                                                                  | 231                                                                                                              |                                                                                    |                                                                                                                |
| NPT, NPTF<br>Rc, W     |                                                                                                              |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
| BSW, BSF               |                                                                                                              |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
| Pg<br>MJ<br>UNJC, UNJF |                                                                                                              |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
| EG (STI)<br>LK-M       |                                                                                                              |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
| MJ<br>UNJC, UNJF       |                                                                                                              |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
| v <sub>c</sub> [m/min] | min. empf. max.<br>rec.                                                                                      | min. empf. max.<br>rec.                                                          | min. empf. max.<br>rec.                                                                                      | min. empf. max.<br>rec.                                                                                      | min. empf. max.<br>rec.                                                          | min. empf. max.<br>rec.                                                                                        | min. empf. max.<br>rec.                                                           | min. empf. max.<br>rec.                                                                                          | min. empf. max.<br>rec.                                                                                          | min. empf. max.<br>rec.                                                            | min. empf. max.<br>rec.                                                                                        |
| P                      | 1.1                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 2.1                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 3.1                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 4.1                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 5.1                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
| M                      | 1.1                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 2.1                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 3.1                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 4.1                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
| K                      | 1.1                                                                                                          | 10 15 25                                                                         | 15 30 45                                                                                                     | 15 30 45                                                                                                     | 40 60 80                                                                         | 40 60 80                                                                                                       |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    | 15 30 45                                                                                                       |
|                        | 1.2                                                                                                          | 10 15 25                                                                         | 15 30 45                                                                                                     | 15 30 45                                                                                                     | 30 45 60                                                                         | 30 45 60                                                                                                       |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    | 15 30 45                                                                                                       |
|                        | 2.1                                                                                                          | 10 15 25                                                                         | 15 30 45                                                                                                     | 15 30 45                                                                                                     | 30 45 60                                                                         | 30 45 60                                                                                                       |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    | 15 30 45                                                                                                       |
|                        | 2.2                                                                                                          | 5 10 15                                                                          | 10 20 40                                                                                                     | 10 20 40                                                                                                     | 10 20 40                                                                         | 10 20 40                                                                                                       |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    | 10 20 40                                                                                                       |
|                        | 3.1                                                                                                          | 5 10 15                                                                          | 15 30 45                                                                                                     | 15 30 45                                                                                                     | 20 30 40                                                                         | 20 30 40                                                                                                       |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    | 15 30 45                                                                                                       |
|                        | 3.2                                                                                                          | 5 10 15                                                                          | 15 30 45                                                                                                     | 15 30 45                                                                                                     | 20 30 40                                                                         | 20 30 40                                                                                                       |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    | 15 30 45                                                                                                       |
|                        | 4.1                                                                                                          | 10 15 25                                                                         | 10 20 30                                                                                                     | 10 20 30                                                                                                     | 40 60 80                                                                         | 40 60 80                                                                                                       |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    | 10 20 30                                                                                                       |
|                        | 4.2                                                                                                          | 10 15 25                                                                         | 10 20 30                                                                                                     | 10 20 30                                                                                                     | 30 45 60                                                                         | 30 45 60                                                                                                       |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    | 10 20 30                                                                                                       |
| N                      | 1.1                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 1.2                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 1.3                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 1.4                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 1.5                                                                                                          |                                                                                  | 30 50 80                                                                                                     | 30 50 80                                                                                                     | 20 40 60                                                                         | 20 40 60                                                                                                       |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    | 30 50 80                                                                                                       |
|                        | 1.6                                                                                                          |                                                                                  | 10 20 30                                                                                                     | 10 20 30                                                                                                     | 20 30 40                                                                         | 20 30 40                                                                                                       |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    | 10 20 30                                                                                                       |
|                        | 2.1                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 2.2                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 2.3                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 2.4                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 2.5                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 2.6                                                                                                          |                                                                                  | 10 20 30                                                                                                     | 10 20 30                                                                                                     | 10 20 30                                                                         | 10 20 30                                                                                                       |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    | 10 20 30                                                                                                       |
|                        | 2.7                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              | 5 10 15                                                                          | 5 10 15                                                                                                        |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 2.8                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              | 1 5 8                                                                            | 1 5 8                                                                                                          |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 3.1                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 3.2                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 4.1                                                                                                          | 5 10 25                                                                          | 10 20 40                                                                                                     | 10 20 40                                                                                                     | 20 40 60                                                                         | 20 40 60                                                                                                       |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    | 10 20 40                                                                                                       |
|                        | 4.2                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 4.3                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              | 10 15 25                                                                         | 10 15 25                                                                                                       |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 4.4                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              | 5 10 15                                                                          | 5 10 15                                                                                                        |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 5.1                                                                                                          |                                                                                  | 10 25 40                                                                                                     | 10 25 40                                                                                                     | 20 40 60                                                                         | 20 40 60                                                                                                       |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 5.2                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              | 5 10 20                                                                          | 5 10 20                                                                                                        |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 5.3                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
| S                      | 1.1                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 1.2                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 1.3                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 2.1                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 2.2                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 2.3                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 2.4                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
| H                      | 1.1                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  | 1 3 5                                                                                                          |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 1.2                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  | 1 2 3                                                                                                          |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |
|                        | 1.3                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                | 1 2 3                                                                             | 1 2 3                                                                                                            | 1 2 3                                                                                                            | 1 2 3                                                                              |                                                                                                                |
|                        | 1.4                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                | 1 1,5 2                                                                           | 1 1,5 2                                                                                                          | 1 1,5 2                                                                                                          | 1 1,5 2                                                                            |                                                                                                                |
|                        | 1.5                                                                                                          |                                                                                  |                                                                                                              |                                                                                                              |                                                                                  |                                                                                                                |                                                                                   |                                                                                                                  |                                                                                                                  |                                                                                    |                                                                                                                |

| EMUGE<br>Z                             |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               | Product<br>Finder |
|----------------------------------------|----------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|----------------------------------------|----------------------------------------|-----------------------------------|----------------------------------|----------------------------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               | V <sub>c</sub>    |
| Rekord<br>A-Z- <b>IKZ</b><br>TiCN      | Rekord<br>A-Z- <b>IKZN</b><br>TiCN     | Rekord<br>A-Z/ <b>E</b><br>TiCN          | Rekord<br>A-Z/ <b>E-IKZ</b><br>TiCN      | Rekord<br>A-Z/ <b>E-IKZN</b><br>TiCN     | Rekord<br>A-Z- <b>IKZ-LF3</b><br>TiCN  | Rekord<br>A-Z- <b>IKZ-LF4</b><br>TiCN  | Rekord<br><b>B-Z</b><br>PM-TiN-70 | Rekord<br><b>B-Z</b><br>PM-GLT-1 | Rekord<br><b>B-Z-IKZN</b><br>PM-TiN-70 | Rekord<br><b>B-Z-IKZN</b><br>PM-GLT-1 | M<br>MF<br>UNC<br>UN-8                                                                                                                        |                   |
| C / 2-3<br>max. 2 x d <sub>1</sub><br> | C / 2-3<br>max. 2 x d <sub>1</sub><br> | E / 1,5-2<br>max. 2 x d <sub>1</sub><br> | E / 1,5-2<br>max. 2 x d <sub>1</sub><br> | E / 1,5-2<br>max. 2 x d <sub>1</sub><br> | C / 2-3<br>max. 3 x d <sub>1</sub><br> | C / 2-3<br>max. 4 x d <sub>1</sub><br> | B / 4-5                           | B / 4-5                          | B / 4-5                                | B / 4-5                               | Gewindetiefe<br>und Lochform<br>Thread depth<br>and hole type                                                                                 |                   |
| <br>107,133<br>180                     | <br>107,133<br>180                     | <br>107,133<br>180                       | <br>108,134<br>181                       | <br>108,134<br>181                       | <br>146<br>188                         | <br>147<br>189                         | 108,134<br>166,181                | 108,134<br>166,181               | 109,135<br>181                         | 109,135<br>181                        | M<br>MF<br>UNC<br>UN-8<br>G, Rp<br>NPSM, NPSF<br>NPT, NPTF, Rc<br>W<br>BSW, BSF<br>Pg<br>MJ<br>UNJC, UNJF<br>EG (STI)<br>LK-M<br>Tr, Tr-F, Rd |                   |
| min. empf. max.<br>rec.                | min. empf. max.<br>rec.                | min. empf. max.<br>rec.                  | min. empf. max.<br>rec.                  | min. empf. max.<br>rec.                  | min. empf. max.<br>rec.                | min. empf. max.<br>rec.                | min. empf. max.<br>rec.           | min. empf. max.<br>rec.          | min. empf. max.<br>rec.                | min. empf. max.<br>rec.               | V <sub>c</sub> [m/min]                                                                                                                        |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               | P                 |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               | M                 |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               | K                 |
| 15 30 45                               | 15 30 45                               | 15 30 45                                 | 15 30 45                                 | 15 30 45                                 | 15 30 45                               | 15 30 45                               |                                   | 5 15 25                          | 5 15 25                                | 5 15 25                               | 1.1                                                                                                                                           |                   |
| 15 30 45                               | 15 30 45                               | 15 30 45                                 | 15 30 45                                 | 15 30 45                                 | 15 30 45                               | 15 30 45                               |                                   | 5 15 25                          | 5 15 25                                | 5 15 25                               | 1.2                                                                                                                                           |                   |
| 15 30 45                               | 15 30 45                               | 15 30 45                                 | 15 30 45                                 | 15 30 45                                 | 15 30 45                               | 15 30 45                               |                                   | 5 10 20                          | 5 10 20                                | 5 10 20                               | 2.1                                                                                                                                           |                   |
| 10 20 40                               | 10 20 40                               | 10 20 40                                 | 10 20 40                                 | 10 20 40                                 | 10 20 40                               | 10 20 40                               |                                   | 5 10 20                          | 5 10 20                                | 5 10 20                               | 2.2                                                                                                                                           |                   |
| 15 30 45                               | 15 30 45                               | 15 30 45                                 | 15 30 45                                 | 15 30 45                                 | 15 30 45                               | 15 30 45                               |                                   | 5 10 20                          | 5 10 20                                | 5 10 20                               | 3.1                                                                                                                                           |                   |
| 15 30 45                               | 15 30 45                               | 15 30 45                                 | 15 30 45                                 | 15 30 45                                 | 15 30 45                               | 15 30 45                               |                                   | 5 10 20                          | 5 10 20                                | 5 10 20                               | 3.2                                                                                                                                           |                   |
| 10 20 30                               | 10 20 30                               | 10 20 30                                 | 10 20 30                                 | 10 20 30                                 | 10 20 30                               | 10 20 30                               |                                   |                                  |                                        |                                       | 4.1                                                                                                                                           |                   |
| 10 20 30                               | 10 20 30                               | 10 20 30                                 | 10 20 30                                 | 10 20 30                                 | 10 20 30                               | 10 20 30                               |                                   |                                  |                                        |                                       | 4.2                                                                                                                                           |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               | S                 |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               | H                 |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |
|                                        |                                        |                                          |                                          |                                          |                                        |                                        |                                   |                                  |                                        |                                       |                                                                                                                                               |                   |



| <div> <div>Product Finder</div> <div>V<sub>c</sub></div> <div>M</div> <div>MF</div> <div>UNC UN-8</div> <div>UNF UNEF</div> <div>G, Rp NPSM, NPSF</div> <div>NPT, NPTF Rc, W</div> <div>BSW, BSF</div> <div>Pg MJ UNJC, UNJF EG (STI) LK-M</div> <div>MJ UNJC, UNJF</div> <div>EG (STI)</div> <div>SELF-LOCK</div> <div>Tr, Tr-F Rd</div> <div>Zubehör Accessories</div> </div> <div> <div>EMUGE Z</div> <div>            </div> </div> |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|
| <div> <div>Rekord D-Z TIN</div> <div>Rekord D-Z-IKZ TIN</div> <div>Rekord D-Z/E-IKZ TIN</div> <div>Rekord D-Z-BF-IKZ TIN</div> <div>Rekord D-Z/E-BF-IKZ TIN</div> <div>Rekord D-Z-IKZ-LF3 TIN</div> <div>Rekord D-Z-BF-IKZ-LF3 TIN</div> <div>Rekord D-Z-IKZ-LF4 TIN</div> <div>Rekord D-Z-BF-IKZ-LF4 TIN</div> <div>Enorm Z-PM GLT-1</div> <div>Enorm Z-IKZ-PM GLT-1</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |  |  |  |  |  |  |  |  |
| <div> <div>C / 2-3</div> <div>C / 2-3</div> <div>E / 1,5-2</div> <div>C / 2-3</div> <div>E / 1,5-2</div> <div>C / 2-3</div> <div>C / 2-3</div> <div>C / 2-3</div> <div>C / 2-3</div> <div>C / 2-3</div> <div>C / 2-3</div> <div>C / 2-3</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |  |  |  |  |
| <div> <div>Gewindetiefe und Lochform Thread depth and hole type</div> <div>max. 2 x d<sub>1</sub></div> <div>max. 3 x d<sub>1</sub></div> <div>max. 4 x d<sub>1</sub></div> <div>max. 3 x d<sub>1</sub></div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |  |  |  |  |
| <div> <div>M 109,135 181</div> <div>MF 109,135 181</div> <div>UNC 110,136 182</div> <div>UNF 110,119,136,145 182</div> <div>UNEF 110,136 182</div> <div>G, Rp 146 188</div> <div>NPSM, NPSF 146 188</div> <div>NPT, NPTF, Rc, W 147 189</div> <div>BSW, BSF 147 189</div> <div>Pg 111,137 183</div> <div>MJ 206,210 218</div> <div>UNJC, UNJF 235</div> <div>EG (STI) 111,137 183</div> <div>LK-M</div> <div>Tr, Tr-F, Rd</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |  |  |  |  |  |  |  |
| <div> <div>v<sub>c</sub> [m/min]</div> <div>min. empf. max. rec.</div> <div>min. empf. max. rec.</div> <div>min. empf. max. rec.</div> <div>min. empf. max. rec.</div> <div>min. empf. max. rec.</div> <div>min. empf. max. rec.</div> <div>min. empf. max. rec.</div> <div>min. empf. max. rec.</div> <div>min. empf. max. rec.</div> <div>min. empf. max. rec.</div> <div>min. empf. max. rec.</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |  |  |  |
| <div> <div>P</div> <div>1.1</div> <div>2.1</div> <div>3.1</div> <div>4.1</div> <div>5.1</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |  |  |  |  |
| <div> <div>M</div> <div>1.1</div> <div>2.1</div> <div>3.1</div> <div>4.1</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |
| <div> <div>K</div> <div>1.1</div> <div>1.2</div> <div>2.1</div> <div>2.2</div> <div>3.1</div> <div>3.2</div> <div>4.1</div> <div>4.2</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |  |  |  |  |  |  |  |
| <div> <div>N</div> <div>1.1</div> <div>1.2</div> <div>1.3</div> <div>1.4</div> <div>1.5</div> <div>1.6</div> <div>2.1</div> <div>2.2</div> <div>2.3</div> <div>2.4</div> <div>2.5</div> <div>2.6</div> <div>2.7</div> <div>2.8</div> <div>3.1</div> <div>3.2</div> <div>4.1</div> <div>4.2</div> <div>4.3</div> <div>4.4</div> <div>5.1</div> <div>5.2</div> <div>5.3</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |  |  |  |  |  |  |  |  |
| <div> <div>S</div> <div>1.1</div> <div>1.2</div> <div>1.3</div> <div>2.1</div> <div>2.2</div> <div>2.3</div> <div>2.4</div> <div>2.5</div> <div>2.6</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  |  |  |  |
| <div> <div>H</div> <div>1.1</div> <div>1.2</div> <div>1.3</div> <div>1.4</div> <div>1.5</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |  |  |  |  |
| <div> <div>15 25 45</div> <div>10 20 40</div> <div>5 15 25</div> <div>5 10 15</div> <div>2 7 10</div> <div>5 8 12</div> <div>5 15 25</div> <div>5 10 20</div> <div>5 10 20</div> <div>5 10 20</div> <div>15 25 40</div> <div>5 15 30</div> <div>10 25 40</div> <div>5 15 25</div> <div>5 15 25</div> <div>5 15 25</div> <div>5 15 25</div> <div>5 15 25</div> <div>5 15 25</div> <div>5 15 25</div> <div>5 15 25</div> <div>5 15 25</div> <div>5 15 25</div> <div>1 3 5</div> <div>1 3 5</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |

| Product Finder         |
|------------------------|
| <b>v<sub>c</sub></b>   |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |





|  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
| WM-Set<br>TIN                                                                    |  | WM-F-TIC-Set<br>NT                                                               |  | AUT-A<br>MS-R                                                                    | KOMBI                                                                              | MMB<br>DIN 357                                                                     | Gewindetiefe<br>und Lochform<br>Thread depth<br>and hole type                       |  |
| C / 2-3                                                                          |  | C / 2-3                                                                          |  | max. 1                                                                           | C / 2-3                                                                            | –                                                                                  |                                                                                     |  |
| max. 2 x d <sub>1</sub>                                                          |  | max. 1 x d <sub>1</sub>                                                          |  | max. 1 x d <sub>1</sub>                                                          | max. 1 x d <sub>1</sub>                                                            | max. 1,5 x d <sub>1</sub>                                                          |                                                                                     |  |
| 156                                                                              |  | 158                                                                              |  | 202                                                                              | 160<br>203                                                                         | 161                                                                                |                                                                                     |  |
|                                                                                  |  |                                                                                  |  | 242,245                                                                          |                                                                                    |                                                                                    |                                                                                     |  |
| min. empf. max.                                                                  |  | min. empf. max.                                                                  |  | min. empf. max.                                                                  | min. empf. max.                                                                    | min. empf. max.                                                                    |                                                                                     |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    |                                                                                     |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    | 5 15 25                                                                            | 1.1                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  | 5 10 20                                                                            | 5 10 20                                                                            | 2.1                                                                                 |  |
| 1 2 3                                                                            |  | 1 2 3                                                                            |  |                                                                                  |                                                                                    | 2 8 15                                                                             | 3.1                                                                                 |  |
| 1 2 3                                                                            |  | 1 2 3                                                                            |  |                                                                                  |                                                                                    |                                                                                    | 4.1                                                                                 |  |
| 1 2 3                                                                            |  | 1 2 3                                                                            |  |                                                                                  |                                                                                    |                                                                                    | 5.1                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.1                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.1                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 3.1                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 4.1                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.1                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.2                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.1                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.2                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 3.1                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 3.2                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 4.1                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 4.2                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.1                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.2                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.3                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.4                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.5                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.6                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.1                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.2                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  | 10 25 40                                                                         | 10 20 40                                                                           | 10 20 40                                                                           | 2.3                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.4                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.5                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  | 5 10 20                                                                          |                                                                                    |                                                                                    | 2.6                                                                                 |  |
| 1 2 3                                                                            |  | 1 2 3                                                                            |  |                                                                                  |                                                                                    |                                                                                    | 2.7                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.8                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 3.1                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 3.2                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 4.1                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 4.2                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 4.3                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 4.4                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 5.1                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 5.2                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 5.3                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.1                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.2                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.3                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.1                                                                                 |  |
| 1 2 3                                                                            |  | 1 2 3                                                                            |  |                                                                                  |                                                                                    |                                                                                    | 2.2                                                                                 |  |
| 1 2 3                                                                            |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.3                                                                                 |  |
| 1 2 3                                                                            |  | 1 2 3                                                                            |  |                                                                                  |                                                                                    |                                                                                    | 2.4                                                                                 |  |
| 1 2 3                                                                            |  | 1 2 3                                                                            |  |                                                                                  |                                                                                    |                                                                                    | 2.5                                                                                 |  |
| 1 2 3                                                                            |  | 1 2 3                                                                            |  |                                                                                  |                                                                                    |                                                                                    | 2.6                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.1                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.2                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.3                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.1                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.2                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.3                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.4                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.5                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 2.6                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.1                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.2                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.3                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.4                                                                                 |  |
|                                                                                  |  |                                                                                  |  |                                                                                  |                                                                                    |                                                                                    | 1.5                                                                                 |  |

| Product<br>Finder      |
|------------------------|
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



| Product Finder         | KEG                                                                                                                                                        | EMUGE<br>-STEEL-                                                                 |                                                                                  | EMUGE<br>-VA-                                                                    |                                                                                  |                                                                                    |                                                                                    | EMUGE<br>-NI-                                                                      |  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--|
|                        |                                                                                                                                                            |  |  |  |  |  |  |  |  |
| M                      |                                                                                                                                                            | Rekord KEG STEEL                                                                 | Rekord KEG STEEL-AZ                                                              | Rekord KEG VA                                                                    | Rekord KEG VA-AZ                                                                 | Rekord KEG R35-VA                                                                  | Rekord KEG R35-VA-AZ                                                               | Rekord KEG R10-NI PM-TiCN                                                          |  |
| MF                     |                                                                           | C / 2-3                                                                          | C / 2-3                                                                          | C / 2-3                                                                          | C / 2-3                                                                          | C / 2-3                                                                            | C / 2-3                                                                            | C / 2-3                                                                            |  |
| UNC<br>UN-8            | Gewindetiefe und Lochform<br>Thread depth and hole type                                                                                                    | —                                                                                | —                                                                                | —                                                                                | —                                                                                | —                                                                                  | —                                                                                  | —                                                                                  |  |
| UNF<br>UNEF            | M<br>MF<br>UNC<br>UNF<br>UNEF, UN-8<br>G, Rp<br>NPSM, NPSF<br>NPT, NPTF, Rc<br>W<br>BSW, BSF<br>Pg<br>MJ<br>UNJC, UNJF<br>EG (STI)<br>LK-M<br>Tr, Tr-F, Rd |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
| G, Rp<br>NPSM, NPSF    |                                                                                                                                                            | 249, 251, 253, 255, 257, 262, 263                                                | 253                                                                              | 249, 251, 255, 257, 261                                                          | 249, 251                                                                         | 250, 252, 255, 257                                                                 | 250, 252                                                                           | 250, 256                                                                           |  |
| NPT, NPTF<br>Rc, W     |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
| BSW, BSF               |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
| Pg                     |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
| MJ<br>UNJC, UNJF       |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
| EG (STI)               |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
| SELF-LOCK              |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
| Tr, Tr-F<br>Rd         |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
| Zubehör<br>Accessories |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
| P                      | v <sub>c</sub> [m/min]                                                                                                                                     | min. empf. max.<br>rec.                                                          | min. empf. max.<br>rec.                                                          | min. empf. max.<br>rec.                                                          | min. empf. max.<br>rec.                                                          | min. empf. max.<br>rec.                                                            | min. empf. max.<br>rec.                                                            | min. empf. max.<br>rec.                                                            |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  | 2 5 8                                                                              | 2 5 8                                                                              |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  | 2 3 6                                                                            | 2 3 6                                                                            | 2 4 6                                                                              | 2 4 6                                                                              |                                                                                    |  |
|                        |                                                                                                                                                            | 1 3 8                                                                            | 1 3 8                                                                            | 1 4 8                                                                            | 1 4 8                                                                            | 1 5 8                                                                              | 1 5 8                                                                              |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  | 1 3 5                                                                            | 1 3 5                                                                            |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
| M                      | v <sub>c</sub> [m/min]                                                                                                                                     |                                                                                  |                                                                                  |                                                                                  |                                                                                  | 1 5 8                                                                              | 1 5 8                                                                              |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  | 1 5 8                                                                              | 1 5 8                                                                              |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  | 1 3 5                                                                              | 1 3 5                                                                              |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
| K                      | v <sub>c</sub> [m/min]                                                                                                                                     | 2 4 10                                                                           | 2 4 10                                                                           |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            | 2 4 10                                                                           | 2 4 10                                                                           |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  | 1 3 5                                                                            | 1 3 5                                                                            |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  | 1 3 5                                                                            | 1 3 5                                                                            |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  | 1 3 5                                                                            | 1 3 5                                                                            |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  | 1 3 5                                                                            | 1 3 5                                                                            |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  | 1 3 5                                                                            | 1 3 5                                                                            |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  | 1 3 5                                                                            | 1 3 5                                                                            |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
| N                      | v <sub>c</sub> [m/min]                                                                                                                                     |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
| S                      | v <sub>c</sub> [m/min]                                                                                                                                     |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
| H                      | v <sub>c</sub> [m/min]                                                                                                                                     |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |
|                        |                                                                                                                                                            |                                                                                  |                                                                                  |                                                                                  |                                                                                  |                                                                                    |                                                                                    |                                                                                    |  |



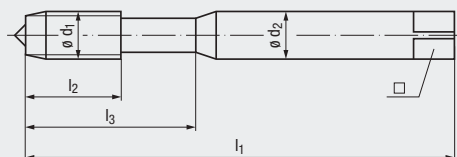


|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



DIN 13

DIN  
371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

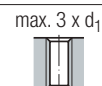
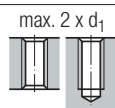


STEEL  
Steel  
materials



|                  |                  |                  |                  |
|------------------|------------------|------------------|------------------|
| 6HX *)           | ISO 2/6H *)      | ISO 2/6H         | ISO 2/6H *)      |
| HSSE             | HSSE             | TIN<br>HSSE      | GLT-1<br>HSSE    |
| C / 2-3<br>E / 0 | B / 4-5<br>E / 0 | B / 4-5<br>E / 0 | B / 4-5<br>E / 0 |

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 78

|                  |                  |                  |                  |
|------------------|------------------|------------------|------------------|
| <b>K</b> 1.1-4.2 | <b>P</b> 1.1-3.1 | <b>P</b> 1.1-4.1 | <b>P</b> 1.1-4.1 |
| <b>N</b> 2.3     | <b>N</b> 2.2     |                  |                  |

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |      | Rekord<br>1A-STEEL | Rekord<br>1B-STEEL-L | Rekord<br>1B-STEEL-L<br>TIN | Rekord<br>1B-STEEL-L<br>GLT-1 |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|--------------------|----------------------|-----------------------------|-------------------------------|
| <b>M</b> 1             | 0,25    | 40             | 5              | —              | 2,5              | 2,1 | 0,75 | B0101001.0010      | B0208900.0010        |                             | B020K500.0010                 |
| 1,1                    | 0,25    | 40             | 5              | —              | 2,5              | 2,1 | 0,85 | B0101001.0011      | B0208900.0011        |                             | B020K500.0011                 |
| 1,2                    | 0,25    | 40             | 5              | —              | 2,5              | 2,1 | 0,95 | B0101001.0012      | B0208900.0012        |                             | B020K500.0012                 |
| 1,4                    | 0,3     | 40             | 6              | —              | 2,5              | 2,1 | 1,1  | B0101001.0014      | B0208900.0014        |                             | B020K500.0014                 |
| 1,6                    | 0,35    | 40             | 6              | 11             | 2,5              | 2,1 | 1,25 | B0101001.0016      | B0208900.0016        |                             | B020K500.0016                 |
| 1,7                    | 0,35    | 40             | 6              | 11             | 2,5              | 2,1 | 1,35 | B0101001.0017      | B0208900.0017        |                             | B020K500.0017                 |
| 1,8                    | 0,35    | 40             | 6              | 11             | 2,5              | 2,1 | 1,45 | B0101001.0018      | B0208900.0018        |                             | B020K500.0018                 |
| 2                      | 0,4     | 45             | 7              | 12             | 2,8              | 2,1 | 1,6  | B0101001.0020      | B0208900.0020        |                             | B020K500.0020                 |
| 2,2                    | 0,45    | 45             | 7              | 12             | 2,8              | 2,1 | 1,75 | B0101001.0022      | B0208900.0022        |                             | B020K500.0022                 |
| 2,3                    | 0,4     | 45             | 7              | 12             | 2,8              | 2,1 | 1,9  | B0101001.0023      | B0208900.0023        |                             | B020K500.0023                 |
| 2,5                    | 0,45    | 50             | 9              | 14             | 2,8              | 2,1 | 2,05 | B0101001.0025      | B0208900.0025        | B0208400.0025               | B020K500.0025                 |
| 2,6                    | 0,45    | 50             | 9              | 14             | 2,8              | 2,1 | 2,15 | B0101001.0026      | B0208900.0026        | B0208400.0026               | B020K500.0026                 |
| 3                      | 0,5     | 56             | 11             | 18             | 3,5              | 2,7 | 2,5  | B0101001.0030      | B0208900.0030        | B0208400.0030               |                               |
| 3,5                    | 0,6     | 56             | 12             | 20             | 4                | 3   | 2,9  | B0101001.0035      | B0208900.0035        | B0208400.0035               |                               |
| 4                      | 0,7     | 63             | 13             | 21             | 4,5              | 3,4 | 3,3  | B0101001.0040      | B0208900.0040        | B0208400.0040               |                               |
| 4,5                    | 0,75    | 70             | 14             | 25             | 6                | 4,9 | 3,7  | B0101001.0045      | B0208900.0045        | B0208400.0045               |                               |
| 5                      | 0,8     | 70             | 15             | 25             | 6                | 4,9 | 4,2  | B0101001.0050      | B0208900.0050        | B0208400.0050               |                               |
| 5,5                    | 0,9     | 80             | 16             | 30             | 6                | 4,9 | 4,6  | B0101001.0055      | B0208900.0055        | B0208400.0055               |                               |
| 6                      | 1       | 80             | 17             | 30             | 6                | 4,9 | 5    | B0101001.0060      | B0208900.0060        | B0208400.0060               |                               |
| 7                      | 1       | 80             | 17             | 30             | 7                | 5,5 | 6    | B0101001.0070      | B0208900.0070        | B0208400.0070               |                               |
| 8                      | 1,25    | 90             | 20             | 35             | 8                | 6,2 | 6,8  | B0101001.0080      | B0208900.0080        | B0208400.0080               |                               |
| 9                      | 1,25    | 90             | 20             | 35             | 9                | 7   | 7,8  | B0101001.0090      | B0208900.0090        | B0208400.0090               |                               |
| 10                     | 1,5     | 100            | 22             | 39             | 10               | 8   | 8,5  | B0101001.0100      | B0208900.0100        | B0208400.0100               |                               |
| 12                     | 1,75    | 110            | 24             | 44             | 12               | 9   | 10,2 | B0208900.0112      | B0208400.0112        |                             |                               |
| DIN 376                |         |                |                |                |                  |     |      | 120                | 120                  | 120                         |                               |
| DIN 352                |         |                |                |                |                  |     |      | 150                | 150                  |                             |                               |

\*) ≤ M1,4 Tol. 4H(X)/5H(X)

## STEEL

Steel  
materials

|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| ISO 1/4H                                                                          | ISO 1/4H                                                                          | ISO 3/6G                                                                          | ISO 3/6G                                                                          | 7G                                                                                | 7G                                                                                | ISO 2/6H                                                                            | ISO 2/6H                                                                            |
| HSSE                                                                              | TIN<br>HSSE                                                                       | HSSE                                                                              | TIN<br>HSSE                                                                       | HSSE                                                                              | TIN<br>HSSE                                                                       | HSSE                                                                                | TIN<br>HSSE                                                                         |
| B / 4-5                                                                           | B / 4-5                                                                           | B / 4-5                                                                           | B / 4-5                                                                           | B / 4-5                                                                           | B / 4-5                                                                           | LH<br>B / 4-5                                                                       | LH<br>B / 4-5                                                                       |
| E / O                                                                             | E / O                                                                             | E / O                                                                             | E / O                                                                             | E / O                                                                             | E / O                                                                             | E / O                                                                               | E / O                                                                               |

max. 3 x d<sub>1</sub>

|                      |                             |                                |                                |                      |                             |                         |                                |
|----------------------|-----------------------------|--------------------------------|--------------------------------|----------------------|-----------------------------|-------------------------|--------------------------------|
| P 1.1-3.1<br>N 2.2   | P 1.1-4.1                   | P 1.1-3.1<br>N 2.2             | P 1.1-4.1                      | P 1.1-3.1<br>N 2.2   | P 1.1-4.1                   | P 1.1-3.1<br>N 2.2      | P 1.1-4.1                      |
| Rekord<br>1B-STEEL-L | Rekord<br>1B-STEEL-L<br>TIN | Rekord<br>1B-STEEL-L           | Rekord<br>1B-STEEL-L<br>TIN    | Rekord<br>1B-STEEL-L | Rekord<br>1B-STEEL-L<br>TIN | Rekord<br>1B-STEEL-L-LH | Rekord<br>1B-STEEL-L-LH<br>TIN |
| B0208910.0020        |                             | B0208920.0020                  |                                | B0208930.0020        |                             | B0208950.0020           |                                |
| B0208910.0025        |                             | B0208920.0025                  |                                | B0208930.0025        |                             | B0208950.0025           |                                |
| B0208910.0030        | B0208410.0030               | B0208920.0030<br>B0208920.0035 | B0208420.0030<br>B0208420.0035 | B0208930.0030        | B0208430.0030               | B0208950.0030           | B0208450.0030                  |
| B0208910.0040        | B0208410.0040               | B0208920.0040                  | B0208420.0040                  | B0208930.0040        | B0208430.0040               | B0208950.0040           | B0208450.0040                  |
| B0208910.0050        | B0208410.0050               | B0208920.0050                  | B0208420.0050                  | B0208930.0050        | B0208430.0050               | B0208950.0050           | B0208450.0050                  |
| B0208910.0060        | B0208410.0060               | B0208920.0060                  | B0208420.0060                  | B0208930.0060        | B0208430.0060               | B0208950.0060           | B0208450.0060                  |
| B0208910.0080        | B0208410.0080               | B0208920.0080                  | B0208420.0080                  | B0208930.0080        | B0208430.0080               | B0208950.0080           | B0208450.0080                  |
| B0208910.0100        | B0208410.0100               | B0208920.0100                  | B0208420.0100                  | B0208930.0100        | B0208430.0100               | B0208950.0100           | B0208450.0100                  |
| 120                  | 121                         | 121                            | 121                            | 121                  | 121                         | 121                     | 121                            |

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNC  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

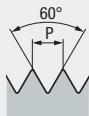
SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

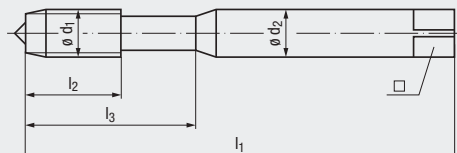
|   |     |
|---|-----|
| M | 1   |
|   | 1,1 |
|   | 1,2 |
|   | 1,4 |
|   | 1,6 |
|   | 1,7 |
|   | 1,8 |
|   | 2   |
|   | 2,2 |
|   | 2,3 |
|   | 2,5 |
|   | 2,6 |
|   | 3   |
|   | 3,5 |
|   | 4   |
|   | 4,5 |
|   | 5   |
|   | 5,5 |
|   | 6   |
|   | 7   |
|   | 8   |
|   | 9   |
|   | 10  |
|   | 12  |

# M

DIN 13



DIN  
371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



STEEL  
Steel  
materials



new



new



6HX  
ALCR-102  
HSSE-PM

B / ≈6  
E / O

6HX  
ALCR-101  
HSSE-PM

B / ≈6  
E / O

ISO 2/6H  
HSSE  
R15  
C / 2-3  
E / O

ISO 2/6H  
HSSE  
R15  
E / 1,5-2  
E / O

Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

max. 3 x d<sub>1</sub>



max. 2 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

» 78

P 3.1-5.1

P 3.1-5.1

P 2.1-3.1

P 2.1-3.1

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |     | Rekord<br>1B-STEEL-H<br>PM-ALCR-102 | Rekord<br>1B-STEEL-H<br>PM-ALCR-101 | Rekord<br>1D-STEEL | Rekord<br>1D-STEEL/E |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|-----|-------------------------------------|-------------------------------------|--------------------|----------------------|
| <b>M</b>               | 1       | 0,25           | 40             | 5              | —                | 2,5 | 2,1 | 0,75                                |                                     |                    |                      |
|                        | 1,1     | 0,25           | 40             | 5              | —                | 2,5 | 2,1 | 0,85                                |                                     |                    |                      |
|                        | 1,2     | 0,25           | 40             | 5              | —                | 2,5 | 2,1 | 0,95                                |                                     |                    |                      |
|                        | 1,4     | 0,3            | 40             | 6              | —                | 2,5 | 2,1 | 1,1                                 |                                     |                    |                      |
|                        | 1,6     | 0,35           | 40             | 6              | 11               | 2,5 | 2,1 | 1,25                                |                                     |                    |                      |
|                        | 1,7     | 0,35           | 40             | 6              | 11               | 2,5 | 2,1 | 1,35                                |                                     |                    |                      |
|                        | 1,8     | 0,35           | 40             | 6              | 11               | 2,5 | 2,1 | 1,45                                |                                     |                    |                      |
|                        | 2       | 0,4            | 45             | 7              | 12               | 2,8 | 2,1 | 1,6                                 | B0209J01.0020                       | B0208J01.0020      | B0451000.0020        |
|                        | 2,2     | 0,45           | 45             | 7              | 12               | 2,8 | 2,1 | 1,75                                |                                     |                    |                      |
|                        | 2,3     | 0,4            | 45             | 7              | 12               | 2,8 | 2,1 | 1,9                                 |                                     |                    |                      |
|                        | 2,5     | 0,45           | 50             | 9              | 14               | 2,8 | 2,1 | 2,05                                | B0209J01.0025                       | B0208J01.0025      | B0451000.0025        |
|                        | 2,6     | 0,45           | 50             | 9              | 14               | 2,8 | 2,1 | 2,15                                |                                     |                    |                      |
|                        | 3       | 0,5            | 56             | 11             | 18               | 3,5 | 2,7 | 2,5                                 | B0209J01.0030                       | B0208J01.0030      | B0451000.0030        |
|                        | 3,5     | 0,6            | 56             | 12             | 20               | 4   | 3   | 2,9                                 |                                     |                    |                      |
|                        | 4       | 0,7            | 63             | 13             | 21               | 4,5 | 3,4 | 3,3                                 | B0209J01.0040                       | B0208J01.0040      | B0451000.0040        |
|                        | 4,5     | 0,75           | 70             | 14             | 25               | 6   | 4,9 | 3,7                                 |                                     |                    |                      |
|                        | 5       | 0,8            | 70             | 15             | 25               | 6   | 4,9 | 4,2                                 | B0209J01.0050                       | B0208J01.0050      | B0451000.0050        |
|                        | 5,5     | 0,9            | 80             | 16             | 30               | 6   | 4,9 | 4,6                                 |                                     |                    |                      |
|                        | 6       | 1              | 80             | 17             | 30               | 6   | 4,9 | 5                                   | B0209J01.0060                       | B0208J01.0060      | B0451000.0060        |
|                        | 7       | 1              | 80             | 17             | 30               | 7   | 5,5 | 6                                   |                                     |                    |                      |
|                        | 8       | 1,25           | 90             | 20             | 35               | 8   | 6,2 | 6,8                                 | B0209J01.0080                       | B0208J01.0080      | B0451000.0080        |
|                        | 9       | 1,25           | 90             | 20             | 35               | 9   | 7   | 7,8                                 |                                     |                    |                      |
|                        | 10      | 1,5            | 100            | 22             | 39               | 10  | 8   | 8,5                                 | B0209J01.0100                       | B0208J01.0100      | B0451000.0100        |
|                        | 12      | 1,75           | 110            | 24             | 44               | 12  | 9   | 10,2                                |                                     |                    |                      |
| DIN 376                |         |                |                |                |                  |     |     |                                     | 122                                 | 122                | 122                  |
| DIN 352                |         |                |                |                |                  |     |     |                                     |                                     | 150                |                      |

| STEEL<br>Steel materials  |                           |                           | VA<br>Stainless steel materials |                     |                                 |                         |     |
|---------------------------|---------------------------|---------------------------|---------------------------------|---------------------|---------------------------------|-------------------------|-----|
|                           |                           |                           |                                 |                     |                                 |                         |     |
| $l_2 \approx 10 \times P$ | $l_2 \approx 10 \times P$ | $l_2 \approx 10 \times P$ |                                 |                     |                                 |                         |     |
| ISO 2/6H                  | ISO 2/6H                  | ISO 2/6H                  | ISO 2/6H *)                     | ISO 2/6H            | ISO 2/6H *)                     | ISO 1/4H                |     |
| TIN                       | HSSE                      | TIN                       | NT                              | TIN                 | GLT-1                           | NT                      |     |
| HSSE                      | HSSE                      | HSSE                      | HSSE                            | HSSE                | HSSE                            | HSSE                    |     |
| R15                       | R35                       | R35                       |                                 |                     |                                 |                         |     |
| C / 2-3                   | C / 2-3                   | C / 2-3                   | B / 4-5                         | B / 4-5             | B / 4-5                         | B / 4-5                 |     |
| E / O                     | E / O                     | E / O                     | E / O / P                       | E / O / P           | E / O / P                       | E / O / P               |     |
| max. 2 x d <sub>1</sub>   | max. 2,5 x d <sub>1</sub> |                           | max. 3 x d <sub>1</sub>         |                     |                                 |                         |     |
|                           |                           |                           |                                 |                     |                                 |                         |     |
| P 3.1-4.1                 | P 1.1-3.1<br>N 2.2        | P 1.1-3.1<br>N 2.2        | P 2.1-3.1<br>N 2.2, 2.5         | P 1.1-4.1           | P 1.1-4.1<br>M 1.1-4.1<br>N 2.2 | P 2.1-3.1<br>N 2.2, 2.5 |     |
| Rekord 1DF-STEEL<br>TIN   | Enorm 1<br>STEEL          | Enorm 1<br>STEEL<br>TIN   | Rekord 1B-VA<br>NT              | Rekord 1B-VA<br>TIN | Rekord 1B-VA<br>GLT-1           | Rekord 1B-VA<br>NT      |     |
|                           |                           |                           | B0203000.0010                   |                     | B020C300.0010                   |                         | M 1 |
|                           |                           |                           | B0203000.0011                   |                     | B020C300.0011                   |                         | 1,1 |
|                           |                           |                           | B0203000.0012                   |                     | B020C300.0012                   |                         | 1,2 |
|                           |                           |                           | B0203000.0014                   |                     | B020C300.0014                   |                         | 1,4 |
|                           |                           |                           | B0203000.0016                   |                     | B020C300.0016                   |                         | 1,6 |
|                           |                           |                           | B0203000.0017                   |                     | B020C300.0017                   |                         | 1,7 |
|                           |                           |                           | B0203000.0018                   |                     | B020C300.0018                   |                         | 1,8 |
|                           | B0501000.0020             | B0501400.0020             | B0203000.0020                   |                     | B020C300.0020                   | B0203010.0020           | 2   |
|                           |                           |                           | B0203000.0022                   |                     | B020C300.0022                   |                         | 2,2 |
|                           |                           |                           | B0203000.0023                   |                     | B020C300.0023                   |                         | 2,3 |
|                           | B0501000.0025             | B0501400.0025             | B0203000.0025                   |                     | B020C300.0025                   | B0203010.0025           | 2,5 |
|                           |                           |                           | B0203000.0026                   |                     | B020C300.0026                   |                         | 2,6 |
| B0401400.0030             | B0501000.0030             | B0501400.0030             | B0203000.0030                   | B0203100.0030       | B020C300.0030                   | B0203010.0030           | 3   |
|                           |                           |                           | B0203000.0035                   |                     |                                 |                         | 3,5 |
| B0401400.0040             | B0501000.0040             | B0501400.0040             | B0203000.0040                   | B0203100.0040       | B020C300.0040                   | B0203010.0040           | 4   |
|                           |                           |                           | B0203000.0045                   | B0203100.0045       | B020C300.0045                   |                         | 4,5 |
| B0401400.0050             | B0501000.0050             | B0501400.0050             | B0203000.0050                   | B0203100.0050       | B020C300.0050                   | B0203010.0050           | 5   |
|                           |                           |                           | B0203000.0055                   | B0203100.0055       | B020C300.0055                   |                         | 5,5 |
| B0401400.0060             | B0501000.0060             | B0501400.0060             | B0203000.0060                   | B0203100.0060       | B020C300.0060                   | B0203010.0060           | 6   |
|                           |                           |                           | B0203000.0070                   | B0203100.0070       | B020C300.0070                   |                         | 7   |
| B0401400.0080             | B0501000.0080             | B0501400.0080             | B0203000.0080                   | B0203100.0080       | B020C300.0080                   | B0203010.0080           | 8   |
|                           |                           |                           | B0203000.0090                   | B0203100.0090       | B020C300.0090                   |                         | 9   |
| B0401400.0100             | B0501000.0100             | B0501400.0100             | B0203000.0100                   | B0203100.0100       | B020C300.0100                   | B0203010.0100           | 10  |
|                           |                           |                           | B0203000.0112                   | B0203100.0112       | B020C300.0112                   |                         | 12  |
|                           |                           |                           |                                 |                     |                                 |                         |     |
| 123                       | 123                       | 123                       | 123                             | 123                 | 123                             | 123                     |     |
|                           |                           |                           | 151                             |                     |                                 |                         |     |

\*) ≤ M1,4 Tol. 4H/5H

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

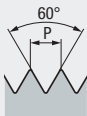
Accessories



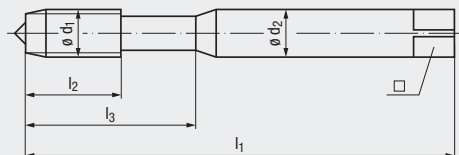
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# M

DIN 13



DIN  
371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

max. 3 x d<sub>1</sub>



|                  |                                                      |                                       |                  |
|------------------|------------------------------------------------------|---------------------------------------|------------------|
| <b>P</b> 1.1-4.1 | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 2.2 | <b>P</b> 2.1-3.1<br><b>N</b> 2.2, 2.5 | <b>P</b> 1.1-4.1 |
|------------------|------------------------------------------------------|---------------------------------------|------------------|

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |      | Rekord<br>1B-VA<br>TIN | Rekord<br>1B-VA<br>GLT-1 | Rekord<br>1B-VA<br>NT | Rekord<br>1B-VA<br>TIN |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|------------------------|--------------------------|-----------------------|------------------------|
| <b>M</b> 1             | 0,25    | 40             | 5              | —              | 2,5              | 2,1 | 0,75 |                        |                          |                       |                        |
| 1,1                    | 0,25    | 40             | 5              | —              | 2,5              | 2,1 | 0,85 |                        |                          |                       |                        |
| 1,2                    | 0,25    | 40             | 5              | —              | 2,5              | 2,1 | 0,95 |                        |                          |                       |                        |
| 1,4                    | 0,3     | 40             | 6              | —              | 2,5              | 2,1 | 1,1  |                        |                          |                       |                        |
| 1,6                    | 0,35    | 40             | 6              | 11             | 2,5              | 2,1 | 1,25 |                        |                          |                       |                        |
| 1,7                    | 0,35    | 40             | 6              | 11             | 2,5              | 2,1 | 1,35 |                        |                          |                       |                        |
| 1,8                    | 0,35    | 40             | 6              | 11             | 2,5              | 2,1 | 1,45 |                        |                          |                       |                        |
| 2                      | 0,4     | 45             | 7              | 12             | 2,8              | 2,1 | 1,6  |                        | B020C310.0020            | <b>B0203020.0020</b>  |                        |
| 2,2                    | 0,45    | 45             | 7              | 12             | 2,8              | 2,1 | 1,75 |                        |                          |                       |                        |
| 2,3                    | 0,4     | 45             | 7              | 12             | 2,8              | 2,1 | 1,9  |                        |                          |                       |                        |
| 2,5                    | 0,45    | 50             | 9              | 14             | 2,8              | 2,1 | 2,05 |                        | B020C310.0025            | <b>B0203020.0025</b>  |                        |
| 2,6                    | 0,45    | 50             | 9              | 14             | 2,8              | 2,1 | 2,15 |                        |                          |                       |                        |
| 3                      | 0,5     | 56             | 11             | 18             | 3,5              | 2,7 | 2,5  | B0203110.0030          | B020C310.0030            | <b>B0203020.0030</b>  | B0203120.0030          |
| 3,5                    | 0,6     | 56             | 12             | 20             | 4                | 3   | 2,9  |                        |                          | <b>B0203020.0035</b>  | B0203120.0035          |
| 4                      | 0,7     | 63             | 13             | 21             | 4,5              | 3,4 | 3,3  | B0203110.0040          | B020C310.0040            | <b>B0203020.0040</b>  | B0203120.0040          |
| 4,5                    | 0,75    | 70             | 14             | 25             | 6                | 4,9 | 3,7  |                        |                          |                       |                        |
| 5                      | 0,8     | 70             | 15             | 25             | 6                | 4,9 | 4,2  | B0203110.0050          | B020C310.0050            | <b>B0203020.0050</b>  | B0203120.0050          |
| 5,5                    | 0,9     | 80             | 16             | 30             | 6                | 4,9 | 4,6  |                        |                          |                       |                        |
| 6                      | 1       | 80             | 17             | 30             | 6                | 4,9 | 5    | B0203110.0060          | B020C310.0060            | <b>B0203020.0060</b>  | B0203120.0060          |
| 7                      | 1       | 80             | 17             | 30             | 7                | 5,5 | 6    |                        |                          |                       |                        |
| 8                      | 1,25    | 90             | 20             | 35             | 8                | 6,2 | 6,8  | B0203110.0080          | B020C310.0080            | <b>B0203020.0080</b>  | B0203120.0080          |
| 9                      | 1,25    | 90             | 20             | 35             | 9                | 7   | 7,8  |                        |                          |                       |                        |
| 10                     | 1,5     | 100            | 22             | 39             | 10               | 8   | 8,5  | B0203110.0100          | B020C310.0100            | <b>B0203020.0100</b>  | B0203120.0100          |
| 12                     | 1,75    | 110            | 24             | 44             | 12               | 9   | 10,2 |                        |                          |                       |                        |
| DIN 376                |         |                |                |                |                  |     |      | 124                    | 124                      | 124                   | 124                    |
| DIN 352                |         |                |                |                |                  |     |      |                        |                          |                       |                        |

**VA**  
 Stainless steel  
 materials

|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|        |        |        |        |        |        |        |        |
|        |        |        |        |        |        |        |        |
| ISO 3/6G                                                                                | 7G                                                                                      | 7G                                                                                      | 7G                                                                                      | ISO 2/6H                                                                                | ISO 2/6H                                                                                | ISO 2/6H                                                                                  | ISO 2/6H                                                                                  |
| GLT-1                                                                                   | NT                                                                                      | TIN                                                                                     | GLT-1                                                                                   | NT                                                                                      | TIN                                                                                     | GLT-1                                                                                     | HSSE                                                                                      |
| HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                      | HSSE                                                                                      |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         | LH                                                                                      | LH                                                                                      | LH                                                                                        | R35                                                                                       |
| B / 4-5                                                                                 | B / 4-5                                                                                 | B / 4-5                                                                                 | B / 4-5                                                                                 | B / 4-5                                                                                 | B / 4-5                                                                                 | B / 4-5                                                                                   | C / 2-3                                                                                   |
| E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                                 | E / O / P                                                                                 |
| max. 3 x d <sub>1</sub>                                                                 |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | max. 2,5 x d <sub>1</sub>                                                                 |
|       |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |       |
| P 1.1-4.1                                                                               | P 2.1-3.1                                                                               | P 1.1-4.1                                                                               | P 1.1-4.1                                                                               | P 2.1-3.1                                                                               | P 1.1-4.1                                                                               | P 1.1-4.1                                                                                 | P 1.1-3.1                                                                                 |
| M 1.1-4.1                                                                               | N 2.2, 2.5                                                                              |                                                                                         | M 1.1-4.1                                                                               | N 2.2, 2.5                                                                              |                                                                                         | M 1.1-4.1                                                                                 |                                                                                           |
| N 2.2                                                                                   |                                                                                         |                                                                                         | N 2.2                                                                                   |                                                                                         |                                                                                         | N 2.2                                                                                     |                                                                                           |
| Rekord 1B-VA GLT-1                                                                      | Rekord 1B-VA NT                                                                         | Rekord 1B-VA TIN                                                                        | Rekord 1B-VA GLT-1                                                                      | Rekord 1B-VA-LH NT                                                                      | Rekord 1B-VA-LH TIN                                                                     | Rekord 1B-VA-LH GLT-1                                                                     | Enorm 1 VA                                                                                |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | M 1                                                                                       |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 1,1                                                                                       |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 1,2                                                                                       |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 1,4                                                                                       |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 1,6                                                                                       |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 1,7                                                                                       |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 1,8                                                                                       |
| B020C320.0020                                                                           | B0203030.0020                                                                           |                                                                                         | B020C330.0020                                                                           | B0203050.0020                                                                           |                                                                                         | B020C350.0020                                                                             | B0503000.0020                                                                             |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 2                                                                                         |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 2,2                                                                                       |
| B020C320.0025                                                                           | B0203030.0025                                                                           |                                                                                         | B020C330.0025                                                                           | B0203050.0025                                                                           |                                                                                         | B020C350.0025                                                                             | B0503000.0025                                                                             |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 2,3                                                                                       |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 2,5                                                                                       |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 2,6                                                                                       |
| B020C320.0030                                                                           | B0203030.0030                                                                           | B0203130.0030                                                                           | B020C330.0030                                                                           | B0203050.0030                                                                           | B0203150.0030                                                                           | B020C350.0030                                                                             | B0503000.0030                                                                             |
| B020C320.0035                                                                           |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 3                                                                                         |
| B020C320.0040                                                                           | B0203030.0040                                                                           | B0203130.0040                                                                           | B020C330.0040                                                                           | B0203050.0040                                                                           | B0203150.0040                                                                           | B020C350.0040                                                                             | B0503000.0040                                                                             |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 3,5                                                                                       |
| B020C320.0050                                                                           | B0203030.0050                                                                           | B0203130.0050                                                                           | B020C330.0050                                                                           | B0203050.0050                                                                           | B0203150.0050                                                                           | B020C350.0050                                                                             | B0503000.0050                                                                             |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 4                                                                                         |
| B020C320.0060                                                                           | B0203030.0060                                                                           | B0203130.0060                                                                           | B020C330.0060                                                                           | B0203050.0060                                                                           | B0203150.0060                                                                           | B020C350.0060                                                                             | B0503000.0060                                                                             |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 4,5                                                                                       |
| B020C320.0080                                                                           | B0203030.0080                                                                           | B0203130.0080                                                                           | B020C330.0080                                                                           | B0203050.0080                                                                           | B0203150.0080                                                                           | B020C350.0080                                                                             | B0503000.0080                                                                             |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 5                                                                                         |
| B020C320.0100                                                                           | B0203030.0100                                                                           | B0203130.0100                                                                           | B020C330.0100                                                                           | B0203050.0100                                                                           | B0203150.0100                                                                           | B020C350.0100                                                                             | B0503000.0100                                                                             |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 5,5                                                                                       |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 6                                                                                         |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 7                                                                                         |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 8                                                                                         |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 9                                                                                         |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 10                                                                                        |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 12                                                                                        |
|  125 |  125 |  125 |  125 |  125 |  125 |  125 |  125 |

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

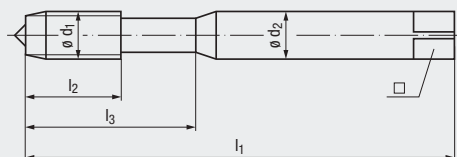
Tr, Tr-F  
RdZubehör  
Accessories



|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



DIN 13



DIN  
371

**INOX**  
Stainless steel  
materials



NEW



l<sub>2</sub> ≈ 10 x P

**GG**  
Cast iron



Technische Informationen  
Technical information

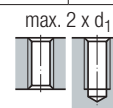
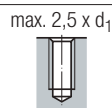
Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



ISO 2/6H  
GLT-201  
HSSE  
R45  
C / 2-3  
E / O

|         |         |
|---------|---------|
| 6HX     | 6HX     |
| NT      | TICN    |
| HSSE    | HSSE    |
| C / 2-3 | C / 2-3 |
| E       | E       |

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

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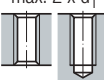
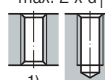
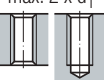
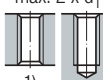
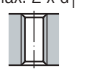
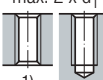
M 1.1-2.1

K 1.1-1.2

K 1.1-1.2

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |      | Enorm 1<br>INOX<br>GLT-201 | Rekord<br>1A-GG<br>NT | Rekord<br>1A-GG<br>TICN |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|----------------------------|-----------------------|-------------------------|
| <b>M</b> 1             | 0,25    | 40             | 5              | —              | 2,5              | 2,1 | 0,75 |                            |                       |                         |
| 1,1                    | 0,25    | 40             | 5              | —              | 2,5              | 2,1 | 0,85 |                            |                       |                         |
| 1,2                    | 0,25    | 40             | 5              | —              | 2,5              | 2,1 | 0,95 |                            |                       |                         |
| 1,4                    | 0,3     | 40             | 6              | —              | 2,5              | 2,1 | 1,1  |                            |                       |                         |
| 1,6                    | 0,35    | 40             | 6              | 11             | 2,5              | 2,1 | 1,25 |                            |                       |                         |
| 1,7                    | 0,35    | 40             | 6              | 11             | 2,5              | 2,1 | 1,35 |                            |                       |                         |
| 1,8                    | 0,35    | 40             | 6              | 11             | 2,5              | 2,1 | 1,45 |                            |                       |                         |
| 2                      | 0,4     | 45             | 7              | 12             | 2,8              | 2,1 | 1,6  | B050J300.0020              |                       |                         |
| 2,2                    | 0,45    | 45             | 7              | 12             | 2,8              | 2,1 | 1,75 |                            |                       |                         |
| 2,3                    | 0,4     | 45             | 7              | 12             | 2,8              | 2,1 | 1,9  |                            |                       |                         |
| 2,5                    | 0,45    | 50             | 9              | 14             | 2,8              | 2,1 | 2,05 | B050J300.0025              |                       |                         |
| 2,6                    | 0,45    | 50             | 9              | 14             | 2,8              | 2,1 | 2,15 |                            |                       |                         |
| 3                      | 0,5     | 56             | 11             | 18             | 3,5              | 2,7 | 2,5  | B050J300.0030              | B0102001.0030         |                         |
| 3,5                    | 0,6     | 56             | 12             | 20             | 4                | 3   | 2,9  |                            |                       |                         |
| 4                      | 0,7     | 63             | 13             | 21             | 4,5              | 3,4 | 3,3  | B050J300.0040              | B0102001.0040         | B0109201.0040           |
| 4,5                    | 0,75    | 70             | 14             | 25             | 6                | 4,9 | 3,7  |                            |                       |                         |
| 5                      | 0,8     | 70             | 15             | 25             | 6                | 4,9 | 4,2  | B050J300.0050              | B0102001.0050         | B0109201.0050           |
| 5,5                    | 0,9     | 80             | 16             | 30             | 6                | 4,9 | 4,6  |                            |                       |                         |
| 6                      | 1       | 80             | 17             | 30             | 6                | 4,9 | 5    | B050J300.0060              | B0102001.0060         | B0109201.0060           |
| 7                      | 1       | 80             | 17             | 30             | 7                | 5,5 | 6    |                            |                       |                         |
| 8                      | 1,25    | 90             | 20             | 35             | 8                | 6,2 | 6,8  | B050J300.0080              | B0102001.0080         | B0109201.0080           |
| 9                      | 1,25    | 90             | 20             | 35             | 9                | 7   | 7,8  |                            |                       |                         |
| 10                     | 1,5     | 100            | 22             | 39             | 10               | 8   | 8,5  | B050J300.0100              | B0102001.0100         | B0109201.0100           |
| 12                     | 1,75    | 110            | 24             | 44             | 12               | 9   | 10,2 |                            |                       |                         |
| DIN 376                |         |                |                |                |                  |     |      | 126                        | 126                   | 126                     |
| DIN 352                |         |                |                |                |                  |     |      |                            |                       |                         |

GJV  
Cast iron  
vermicular

| GJV<br>Cast iron<br>vermicular                                                                                |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                                                 |                                                                                           |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|                              |                              |                              |                              |                              |                               |                              |        |
|                              |                              |                              |                              |                              |                               |                              |        |
| 6HX<br>TICN<br>HSSE-PM                                                                                        | 6HX<br>TICN<br>HSSE-PM                                                                                        | 6HX<br>TICN<br>HSSE-PM                                                                                        | 6HX<br>TICN<br>HSSE-PM                                                                                        | 6HX<br>TICN<br>HSSE-PM                                                                                        | 6HX<br>TICN<br>HSSE-PM                                                                                         | 6HX<br>TICN<br>VHM                                                                                              | 6HX<br>TICN<br>VHM                                                                        |
| C / 2-3<br>E                                                                                                  | C / 2-3<br>E                                                                                                  | C / 2-3<br>E                                                                                                  | E / 1,5-2<br>E                                                                                                | E / 1,5-2<br>E                                                                                                | E / 1,5-2<br>E                                                                                                 | C / 2-3<br>E                                                                                                    | E / 1,5-2<br>E                                                                            |
| max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> |                                                                                           |
| K 1.1-4.2                                                                                                     | K 1.1-4.2                                                                                                     | K 1.1-4.2                                                                                                     | K 1.1-4.2                                                                                                     | K 1.1-4.2                                                                                                     | K 1.1-4.2                                                                                                      | K 1.1-4.2                                                                                                       | K 1.1-4.2                                                                                 |
| Rekord<br>1A-GJV<br>PM-TICN                                                                                   | Rekord<br>1A-GJV-IKZ<br>PM-TICN                                                                               | Rekord<br>1A-GJV-IKZN<br>PM-TICN                                                                              | Rekord<br>1A-GJV/E<br>PM-TICN                                                                                 | Rekord<br>1A-GJV/E-IKZ<br>PM-TICN                                                                             | Rekord<br>1A-GJV/E-IKZN<br>PM-TICN                                                                             | VHM-Rekord<br>1A-GJV-IKZ<br>TICN                                                                                | VHM-Rekord<br>1A-GJV/E-IKZ<br>TICN                                                        |
| B010R501.0040                                                                                                 | B195R501.0040                                                                                                 |                                                                                                               | B011R501.0040                                                                                                 | B196R501.0040                                                                                                 |                                                                                                                | B1951P01.0040                                                                                                   | B1961P01.0040                                                                             |
| B010R501.0050                                                                                                 | B195R501.0050                                                                                                 | B106R501.0050                                                                                                 | B011R501.0050                                                                                                 | B196R501.0050                                                                                                 | B109R501.0050                                                                                                  | B1951P01.0050                                                                                                   | B1961P01.0050                                                                             |
| B010R501.0060                                                                                                 | B195R501.0060                                                                                                 | B106R501.0060                                                                                                 | B011R501.0060                                                                                                 | B196R501.0060                                                                                                 | B109R501.0060                                                                                                  | B1951P01.0060                                                                                                   | B1961P01.0060                                                                             |
| B010R501.0070                                                                                                 | B195R501.0070                                                                                                 | B106R501.0070                                                                                                 | B011R501.0070                                                                                                 | B196R501.0070                                                                                                 | B109R501.0070                                                                                                  | B1951P01.0070                                                                                                   | B1961P01.0070                                                                             |
| B010R501.0080                                                                                                 | B195R501.0080                                                                                                 | B106R501.0080                                                                                                 | B011R501.0080                                                                                                 | B196R501.0080                                                                                                 | B109R501.0080                                                                                                  | B1951P01.0080                                                                                                   | B1961P01.0080                                                                             |
| B010R501.0100                                                                                                 | B195R501.0100                                                                                                 | B106R501.0100                                                                                                 | B011R501.0100                                                                                                 | B196R501.0100                                                                                                 | B109R501.0100                                                                                                  | B1951P01.0100                                                                                                   | B1961P01.0100                                                                             |
|  127                       |  127                       |  127                       |  127                       |  127                       |  127                        |  127                       |  127 |

1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

Accessories

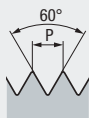


|   |     |
|---|-----|
| M | 1   |
|   | 1,1 |
|   | 1,2 |
|   | 1,4 |
|   | 1,6 |
|   | 1,7 |
|   | 1,8 |
|   | 2   |
|   | 2,2 |
|   | 2,3 |
|   | 2,5 |
|   | 2,6 |
|   | 3   |
|   | 3,5 |
|   | 4   |
|   | 4,5 |
|   | 5   |
|   | 5,5 |
|   | 6   |
|   | 7   |
|   | 8   |
|   | 9   |
|   | 10  |
|   | 12  |

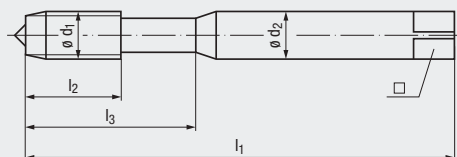
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# M

DIN 13



DIN  
371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

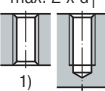
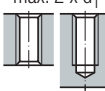
Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

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| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |     | Rekord<br>1B-AL | Rekord<br>1B-AL<br>GLT-104 | Enorm<br>1-AL | Enorm<br>1-AL<br>GLT-104 |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|-----|-----------------|----------------------------|---------------|--------------------------|
| <b>M</b>               | 1       | 0,25           | 40             | 5              | —                | 2,5 | 2,1 | 0,75            |                            |               |                          |
|                        | 1,1     | 0,25           | 40             | 5              | —                | 2,5 | 2,1 | 0,85            |                            |               |                          |
|                        | 1,2     | 0,25           | 40             | 5              | —                | 2,5 | 2,1 | 0,95            |                            |               |                          |
|                        | 1,4     | 0,3            | 40             | 6              | —                | 2,5 | 2,1 | 1,1             | B0204500.0014              | B0203G00.0014 | B0504500.0014            |
|                        | 1,6     | 0,35           | 40             | 6              | 11               | 2,5 | 2,1 | 1,25            | B0204500.0016              | B0203G00.0016 | B0504500.0016            |
|                        | 1,7     | 0,35           | 40             | 6              | 11               | 2,5 | 2,1 | 1,35            |                            |               |                          |
|                        | 1,8     | 0,35           | 40             | 6              | 11               | 2,5 | 2,1 | 1,45            |                            |               |                          |
|                        | 2       | 0,4            | 45             | 7              | 12               | 2,8 | 2,1 | 1,6             | B0204500.0020              | B0203G00.0020 | B0504500.0020            |
|                        | 2,2     | 0,45           | 45             | 7              | 12               | 2,8 | 2,1 | 1,75            |                            |               |                          |
|                        | 2,3     | 0,4            | 45             | 7              | 12               | 2,8 | 2,1 | 1,9             |                            |               |                          |
|                        | 2,5     | 0,45           | 50             | 9              | 14               | 2,8 | 2,1 | 2,05            | B0204500.0025              | B0203G00.0025 | B0504500.0025            |
|                        | 2,6     | 0,45           | 50             | 9              | 14               | 2,8 | 2,1 | 2,15            |                            |               |                          |
|                        | 3       | 0,5            | 56             | 11             | 18               | 3,5 | 2,7 | 2,5             | B0204500.0030              | B0203G00.0030 | B0504500.0030            |
|                        | 3,5     | 0,6            | 56             | 12             | 20               | 4   | 3   | 2,9             | B0204500.0035              | B0203G00.0035 | B0504500.0035            |
|                        | 4       | 0,7            | 63             | 13             | 21               | 4,5 | 3,4 | 3,3             | B0204500.0040              | B0203G00.0040 | B0504500.0040            |
|                        | 4,5     | 0,75           | 70             | 14             | 25               | 6   | 4,9 | 3,7             |                            |               |                          |
|                        | 5       | 0,8            | 70             | 15             | 25               | 6   | 4,9 | 4,2             | B0204500.0050              | B0203G00.0050 | B0504500.0050            |
|                        | 5,5     | 0,9            | 80             | 16             | 30               | 6   | 4,9 | 4,6             |                            |               |                          |
|                        | 6       | 1              | 80             | 17             | 30               | 6   | 4,9 | 5               | B0204500.0060              | B0203G00.0060 | B0504500.0060            |
|                        | 7       | 1              | 80             | 17             | 30               | 7   | 5,5 | 6               |                            |               |                          |
|                        | 8       | 1,25           | 90             | 20             | 35               | 8   | 6,2 | 6,8             | B0204500.0080              | B0203G00.0080 | B0504500.0080            |
|                        | 9       | 1,25           | 90             | 20             | 35               | 9   | 7   | 7,8             |                            |               |                          |
|                        | 10      | 1,5            | 100            | 22             | 39               | 10  | 8   | 8,5             | B0204500.0100              | B0203G00.0100 | B0504500.0100            |
|                        | 12      | 1,75           | 110            | 24             | 44               | 12  | 9   | 10,2            |                            |               |                          |
| DIN 376                |         |                |                |                |                  |     |     | 128             | 128                        | 128           | 128                      |
| DIN 352                |         |                |                |                |                  |     |     |                 |                            |               |                          |

<sup>\*)</sup> ≤ M1,4 Tol. 4H/5H

| AL<br>Aluminium<br>wrought alloys                                                                                                                                                                  |  | GAL<br>Aluminium<br>cast alloys                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     | MG<br>Magnesium<br>alloys                                                                                                                                                                               | Product<br>Finder      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| <br><br>$l_2 \approx 10 \times P$ |  | <br><br>$l_2 \approx 10 \times P$ | <br><br>$l_2 \approx 10 \times P$ | <br><br>$l_2 \approx 10 \times P$ | <br><br>$l_2 \approx 10 \times P$ | <br><br>$l_2 \approx 10 \times P$ |                        |
| ISO 2/6H                                                                                                                                                                                           |  | 6HX                                                                                                                                                                                                 | 6HX                                                                                                                                                                                                 | 6HX                                                                                                                                                                                                 | 6HX                                                                                                                                                                                                 | 6HX                                                                                                                                                                                                     | EG (STI)               |
| GLT-104                                                                                                                                                                                            |  | TICN                                                                                                                                                                                                | TICN                                                                                                                                                                                                | TICN                                                                                                                                                                                                | TICN                                                                                                                                                                                                | GLT-1                                                                                                                                                                                                   | SELF-LOCK              |
| HSSE                                                                                                                                                                                               |  | HSSE                                                                                                                                                                                                | HSSE                                                                                                                                                                                                | HSSE                                                                                                                                                                                                | <b>VHM</b>                                                                                                                                                                                          | HSSE                                                                                                                                                                                                    | Tr, Tr-F<br>Rd         |
| R45                                                                                                                                                                                                |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     | R15                                                                                                                                                                                                 | R15                                                                                                                                                                                                 |                                                                                                                                                                                                         | Zubehör<br>Accessories |
| <b>E / 1,5-2</b>                                                                                                                                                                                   |  | <b>E / 1,5-2</b>                                                                                                                                                                                    | <b>E / 1,5-2</b>                                                                                                                                                                                    | <b>E / 1,5-2</b>                                                                                                                                                                                    | <b>E / 1,5-2</b>                                                                                                                                                                                    | C / 2-3                                                                                                                                                                                                 |                        |
| E / O                                                                                                                                                                                              |  | E / M                                                                                                                                                                                               | E / M                                                                                                                                                                                               | E / M                                                                                                                                                                                               | E / M                                                                                                                                                                                               | E                                                                                                                                                                                                       |                        |
| max. 2,5 x d <sub>1</sub>                                                                                                                                                                          |  | max. 2 x d <sub>1</sub>                                                                                                                                                                             | max. 2 x d <sub>1</sub>                                                                                                                                                                             | max. 2 x d <sub>1</sub>                                                                                                                                                                             |                                                                                                                                                                                                     | max. 2 x d <sub>1</sub>                                                                                                                                                                                 |                        |
|                                                                                                                  |  |                                                                                                                   |                                                                                                                   |                                                                                                                   |                                                                                                                                                                                                     |                                                                                                                     |                        |
| <b>N 1.1-1.4, 2.1</b>                                                                                                                                                                              |  | <b>N 1.5-1.6</b>                                                                                                                                                                                    | <b>N 1.5-1.6</b>                                                                                                                                                                                    | <b>N 1.4-1.6</b>                                                                                                                                                                                    | <b>N 1.4-1.6</b>                                                                                                                                                                                    | <b>N 3.1-3.2</b>                                                                                                                                                                                        |                        |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         |                        |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         |                        |
| <b>Enorm<br/>1-AL/E<br/>GLT-104</b>                                                                                                                                                                |  | <b>Rekord<br/>1A-GAL/E-IKZ<br/>TICN</b>                                                                                                                                                             | <b>Rekord<br/>1A-GAL/E-IKZN<br/>TICN</b>                                                                                                                                                            | <b>Rekord<br/>1D-GAL/E-IKZ<br/>TICN</b>                                                                                                                                                             | <b>VHM-Rekord<br/>1D-GAL/E-IKZ<br/>TICN</b>                                                                                                                                                         | <b>Rekord<br/>1A-MG<br/>GLT-1</b>                                                                                                                                                                       |                        |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | M 1                    |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 1,1                    |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 1,2                    |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 1,4                    |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 1,6                    |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 1,7                    |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 1,8                    |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 2                      |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 2,2                    |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 2,3                    |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 2,5                    |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 2,6                    |
| <b>B0513G00.0030</b>                                                                                                                                                                               |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     | <b>B010J601.0030</b>                                                                                                                                                                                    | 3                      |
| <b>B0513G00.0040</b>                                                                                                                                                                               |  | <b>B1969501.0040</b>                                                                                                                                                                                |                                                                                                                                                                                                     | <b>B0989501.0040</b>                                                                                                                                                                                | <b>B098Q801.0040</b>                                                                                                                                                                                | <b>B010J601.0040</b>                                                                                                                                                                                    | 3,5                    |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 4                      |
| <b>B0513G00.0050</b>                                                                                                                                                                               |  | <b>B1969501.0050</b>                                                                                                                                                                                | B1099501.0050                                                                                                                                                                                       | <b>B0989501.0050</b>                                                                                                                                                                                | <b>B098Q801.0050</b>                                                                                                                                                                                | <b>B010J601.0050</b>                                                                                                                                                                                    | 4,5                    |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 5                      |
| <b>B0513G00.0060</b>                                                                                                                                                                               |  | <b>B1969501.0060</b>                                                                                                                                                                                | B1099501.0060                                                                                                                                                                                       | <b>B0989501.0060</b>                                                                                                                                                                                | <b>B098Q801.0060</b>                                                                                                                                                                                | <b>B010J601.0060</b>                                                                                                                                                                                    | 5,5                    |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 6                      |
| <b>B0513G00.0080</b>                                                                                                                                                                               |  | <b>B1969501.0080</b>                                                                                                                                                                                | B1099501.0080                                                                                                                                                                                       | <b>B0989501.0080</b>                                                                                                                                                                                | <b>B098Q801.0080</b>                                                                                                                                                                                | <b>B010J601.0080</b>                                                                                                                                                                                    | 7                      |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 8                      |
| <b>B0513G00.0100</b>                                                                                                                                                                               |  | <b>B1969501.0100</b>                                                                                                                                                                                | B1099501.0100                                                                                                                                                                                       | <b>B0989501.0100</b>                                                                                                                                                                                | <b>B098Q801.0100</b>                                                                                                                                                                                | <b>B010J601.0100</b>                                                                                                                                                                                    | 9                      |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 10                     |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 12                     |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         |                        |
|                                                                                                                                                                                                    |  |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                     |                                                                                                                                                                                                         |                        |

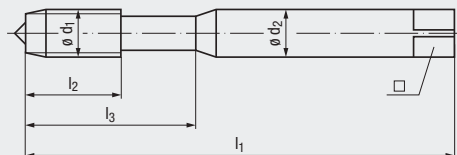
1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



DIN 13

DIN  
371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

FK  
Short-chipping  
synthetics



l<sub>2</sub> ≈ 10 x P



l<sub>2</sub> ≈ 10 x P

PVC  
Long-chipping  
synthetics

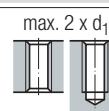


l<sub>2</sub> ≈ 10 x P

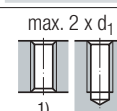
6HX  
NT  
HSSE  
C / 2-3  
E

6HX  
VHM  
C / 2-3  
E

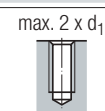
6HX  
CRN  
HSSE  
R15  
E / 1,5-2  
E



N 4.1, 4.3



K 1.1-4.2  
N 1.5-1.6  
N 2.6-2.8  
N 4.1, 4.3-5.2



N 4.2

| Ø d <sub>1</sub><br>mm                                                                      | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |  | Rekord<br>1A-FK<br>NT | VHM-Rekord<br>1A-FK-IKZ |               | Rekord<br>1D-PVC/E<br>CRN |
|---------------------------------------------------------------------------------------------|---------|----------------|----------------|----------------|------------------|-----|-------------------------------------------------------------------------------------|-----------------------|-------------------------|---------------|---------------------------|
| M                                                                                           | 1       | 0,25           | 40             | 5              | —                | 2,5 | 2,1                                                                                 | 0,75                  |                         |               |                           |
|                                                                                             | 1,1     | 0,25           | 40             | 5              | —                | 2,5 | 2,1                                                                                 | 0,85                  |                         |               |                           |
|                                                                                             | 1,2     | 0,25           | 40             | 5              | —                | 2,5 | 2,1                                                                                 | 0,95                  |                         |               |                           |
|                                                                                             | 1,4     | 0,3            | 40             | 6              | —                | 2,5 | 2,1                                                                                 | 1,1                   |                         |               |                           |
|                                                                                             | 1,6     | 0,35           | 40             | 6              | 11               | 2,5 | 2,1                                                                                 | 1,25                  |                         |               |                           |
|                                                                                             | 1,7     | 0,35           | 40             | 6              | 11               | 2,5 | 2,1                                                                                 | 1,35                  |                         |               |                           |
|                                                                                             | 1,8     | 0,35           | 40             | 6              | 11               | 2,5 | 2,1                                                                                 | 1,45                  |                         |               |                           |
|                                                                                             | 2       | 0,4            | 45             | 7              | 12               | 2,8 | 2,1                                                                                 | 1,6                   |                         |               |                           |
|                                                                                             | 2,2     | 0,45           | 45             | 7              | 12               | 2,8 | 2,1                                                                                 | 1,75                  |                         |               |                           |
|                                                                                             | 2,3     | 0,4            | 45             | 7              | 12               | 2,8 | 2,1                                                                                 | 1,9                   |                         |               |                           |
|                                                                                             | 2,5     | 0,45           | 50             | 9              | 14               | 2,8 | 2,1                                                                                 | 2,05                  |                         |               |                           |
|                                                                                             | 2,6     | 0,45           | 50             | 9              | 14               | 2,8 | 2,1                                                                                 | 2,15                  |                         |               |                           |
|                                                                                             | 3       | 0,5            | 56             | 11             | 18               | 3,5 | 2,7                                                                                 | 2,5                   | B010T001.0030           | B8170901.0030 | B046L801.0030             |
|                                                                                             | 3,5     | 0,6            | 56             | 12             | 20               | 4   | 3                                                                                   | 2,9                   |                         |               |                           |
|                                                                                             | 4       | 0,7            | 63             | 13             | 21               | 4,5 | 3,4                                                                                 | 3,3                   | B010T001.0040           | B8170901.0040 | B046L801.0040             |
|                                                                                             | 4,5     | 0,75           | 70             | 14             | 25               | 6   | 4,9                                                                                 | 3,7                   |                         |               |                           |
|                                                                                             | 5       | 0,8            | 70             | 15             | 25               | 6   | 4,9                                                                                 | 4,2                   | B010T001.0050           | B8170901.0050 | B046L801.0050             |
|                                                                                             | 5,5     | 0,9            | 80             | 16             | 30               | 6   | 4,9                                                                                 | 4,6                   |                         |               |                           |
|                                                                                             | 6       | 1              | 80             | 17             | 30               | 6   | 4,9                                                                                 | 5                     | B010T001.0060           | B8170901.0060 | B046L801.0060             |
|                                                                                             | 7       | 1              | 80             | 17             | 30               | 7   | 5,5                                                                                 | 6                     |                         |               |                           |
|                                                                                             | 8       | 1,25           | 90             | 20             | 35               | 8   | 6,2                                                                                 | 6,8                   | B010T001.0080           | B8170901.0080 | B046L801.0080             |
|                                                                                             | 9       | 1,25           | 90             | 20             | 35               | 9   | 7                                                                                   | 7,8                   |                         |               |                           |
|                                                                                             | 10      | 1,5            | 100            | 22             | 39               | 10  | 8                                                                                   | 8,5                   | B010T001.0100           | B8170901.0100 | B046L801.0100             |
|                                                                                             | 12      | 1,75           | 110            | 24             | 44               | 12  | 9                                                                                   | 10,2                  |                         |               |                           |
| DIN 376  |         |                |                |                |                  |     |                                                                                     |                       |                         |               |                           |
| DIN 352  |         |                |                |                |                  |     |                                                                                     |                       |                         |               |                           |

1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

|                        |
|------------------------|
| Product Finder         |
| V <sub>C</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, Rp      |
| NPT, NPT<br>Rc, W      |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

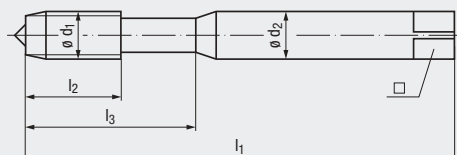




|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



DIN 13



DIN 371

NI  
Nickel  
alloys



H  
Materials of high  
tensile strength



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

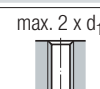


6HX  
TICN  
HSSE-PM  
L08  
D / 4-5  
O / P

6HX  
TICN  
HSSE-PM  
R10  
C / 2-3  
O / P

6HX  
NT  
HSSE  
C / 2-3  
E / O / P

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 78

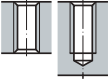
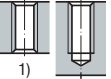
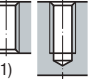
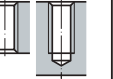
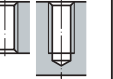
N 2.8  
S 2.3, 2.5-2.6

N 2.8  
S 2.3, 2.5-2.6

K 1.1-4.2  
N 4.1

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |     | Rekord<br>1C-NI<br>PM-TICN | Rekord<br>1DF-NI<br>PM-TICN | Rekord<br>1A-H<br>NT |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|-----|----------------------------|-----------------------------|----------------------|
| <b>M</b>               | 1       | 0,25           | 40             | 5              | —                | 2,5 | 2,1 | 0,75                       |                             |                      |
|                        | 1,1     | 0,25           | 40             | 5              | —                | 2,5 | 2,1 | 0,85                       |                             |                      |
|                        | 1,2     | 0,25           | 40             | 5              | —                | 2,5 | 2,1 | 0,95                       |                             |                      |
|                        | 1,4     | 0,3            | 40             | 6              | —                | 2,5 | 2,1 | 1,1                        |                             |                      |
|                        | 1,6     | 0,35           | 40             | 6              | 11               | 2,5 | 2,1 | 1,25                       |                             |                      |
|                        | 1,7     | 0,35           | 40             | 6              | 11               | 2,5 | 2,1 | 1,35                       |                             |                      |
|                        | 1,8     | 0,35           | 40             | 6              | 11               | 2,5 | 2,1 | 1,45                       |                             |                      |
|                        | 2       | 0,4            | 45             | 7              | 12               | 2,8 | 2,1 | 1,6                        |                             | B0100501.0020        |
|                        | 2,2     | 0,45           | 45             | 7              | 12               | 2,8 | 2,1 | 1,75                       |                             |                      |
|                        | 2,3     | 0,4            | 45             | 7              | 12               | 2,8 | 2,1 | 1,9                        |                             |                      |
|                        | 2,5     | 0,45           | 50             | 9              | 14               | 2,8 | 2,1 | 2,05                       |                             | B0100501.0025        |
|                        | 2,6     | 0,45           | 50             | 9              | 14               | 2,8 | 2,1 | 2,15                       |                             |                      |
|                        | 3       | 0,5            | 56             | 11             | 18               | 3,5 | 2,7 | 2,5                        | B030J401.0030               | B438J401.0030        |
|                        | 3,5     | 0,6            | 56             | 12             | 20               | 4   | 3   | 2,9                        | B030J401.0040               | B438J401.0040        |
|                        | 4       | 0,7            | 63             | 13             | 21               | 4,5 | 3,4 | 3,3 <sup>2)</sup>          | B030J401.0050               | B438J401.0050        |
|                        | 4,5     | 0,75           | 70             | 14             | 25               | 6   | 4,9 | 3,7                        | B030J401.0060               | B438J401.0060        |
|                        | 5       | 0,8            | 70             | 15             | 25               | 6   | 4,9 | 4,2 <sup>2)</sup>          | B030J401.0070               | B438J401.0070        |
|                        | 5,5     | 0,9            | 80             | 16             | 30               | 6   | 4,9 | 4,6                        | B030J401.0080               | B438J401.0080        |
|                        | 6       | 1              | 80             | 17             | 30               | 6   | 4,9 | 5 <sup>2)</sup>            | B030J401.0090               | B438J401.0090        |
|                        | 7       | 1              | 80             | 17             | 30               | 7   | 5,5 | 6                          | B030J401.0100               | B438J401.0100        |
|                        | 8       | 1,25           | 90             | 20             | 35               | 8   | 6,2 | 6,8 <sup>2)</sup>          |                             |                      |
|                        | 9       | 1,25           | 90             | 20             | 35               | 9   | 7   | 7,8                        |                             |                      |
|                        | 10      | 1,5            | 100            | 22             | 39               | 10  | 8   | 8,5 <sup>2)</sup>          |                             |                      |
|                        | 12      | 1,75           | 110            | 24             | 44               | 12  | 9   | 10,2                       |                             |                      |
| DIN 376                |         |                |                |                |                  |     |     | 129                        | 129                         | 130                  |
| DIN 352                |         |                |                |                |                  |     |     |                            |                             |                      |

<sup>2)</sup> Vorbohrerdurchmesser für Gewindebohrer Rekord 1A-HCUT-PM-TICN um 0,1 mm anheben  
Increase drill diameter for taps Rekord 1A-HCUT-PM-TICN by 0.1 mm

| H<br>Materials of high tensile strength                                                                       |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 | HCUT<br>Hardened steels                                                                                           |  |     |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--|-----|
|                              |                              |                              |                              |                                |                                |  |     |
|                              |                              |                              |                              |                                |                                |  |     |
| 6HX<br>TICN<br>HSSE                                                                                           | 6HX<br>NT<br>HSSE                                                                                             | 6HX<br>TICN<br>HSSE                                                                                           | 6HX<br>TICN<br>HSSE                                                                                           | 6HX<br>VHM                                                                                                      | 6HX<br>TICN<br>HSSE-PM                                                                                            |  |     |
| C / 2-3<br>E / O / P                                                                                          | C / 2-3<br>E / O                                                                                              | C / 2-3<br>E / O                                                                                              | C / 2-3<br>E / O                                                                                              | C / 2-3<br>E / O                                                                                                | C / 2-3<br>O / P                                                                                                  |  |     |
| max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 1,5 x d <sub>1</sub><br> |  |     |
| K 1.1-4.2<br>N 1.5-1.6, 2.6<br>N 4.1, 5.1                                                                     | K 1.1-4.2<br>N 4.1                                                                                            | K 1.1-4.2<br>N 1.5-1.6, 2.6<br>N 4.1, 5.1                                                                     | K 1.1-4.2<br>N 1.5-1.6, 2.6<br>N 4.1, 5.1                                                                     | K 1.1-4.2<br>N 1.5-1.6<br>N 2.6-2.8<br>N 4.1, 4.3-4.4<br>N 5.1-5.2                                              | H 1.1-1.2                                                                                                         |  |     |
| Rekord<br>1A-H<br>TICN                                                                                        | Rekord<br>1A-H-IKZ<br>NT                                                                                      | Rekord<br>1A-H-IKZ<br>TICN                                                                                    | Rekord<br>1A-H-IKZN<br>TICN                                                                                   | VHM-Rekord<br>1A-H-IKZ                                                                                          | Rekord<br>1A-HCUT<br>PM-TICN                                                                                      |  |     |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | M 1 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 1,1 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 1,2 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 1,4 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 1,6 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 1,7 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 1,8 |
| B0109101.0020                                                                                                 |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 2   |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 2,2 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 2,3 |
| B0109101.0025                                                                                                 |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 2,5 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 2,6 |
| B0109101.0030                                                                                                 |                                                                                                               |                                                                                                               |                                                                                                               | B1950901.0030                                                                                                   |                                                                                                                   |  | 3   |
| B0109101.0035                                                                                                 |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 3,5 |
| B0109101.0040                                                                                                 |                                                                                                               |                                                                                                               |                                                                                                               | B1950901.0040                                                                                                   | B010J901.0040                                                                                                     |  | 4   |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 4,5 |
| B0109101.0050                                                                                                 | B1950501.0050                                                                                                 | B1959101.0050                                                                                                 | B1069101.0050                                                                                                 | B1950901.0050                                                                                                   | B010J901.0050                                                                                                     |  | 5   |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 5,5 |
| B0109101.0060                                                                                                 | B1950501.0060                                                                                                 | B1959101.0060                                                                                                 | B1069101.0060                                                                                                 | B1950901.0060                                                                                                   | B010J901.0060                                                                                                     |  | 6   |
| B0109101.0070                                                                                                 |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 7   |
| B0109101.0080                                                                                                 | B1950501.0080                                                                                                 | B1959101.0080                                                                                                 | B1069101.0080                                                                                                 | B1950901.0080                                                                                                   | B010J901.0080                                                                                                     |  | 8   |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 9   |
| B0109101.0100                                                                                                 | B1950501.0100                                                                                                 | B1959101.0100                                                                                                 | B1069101.0100                                                                                                 | B1950901.0100                                                                                                   | B010J901.0100                                                                                                     |  | 10  |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                 |                                                                                                                   |  | 12  |
|  130                       |  130                       |  130                       |  131                       |  131                         |  131                         |  |     |

1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

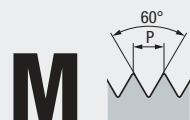
Rd

Zubehör

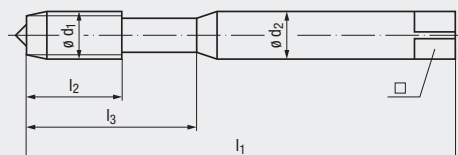
Accessories







DIN 13

DIN  
371

Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

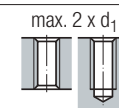
» 78

| $\emptyset d_1$<br>mm | P<br>mm | $l_1$ | $l_2$ | $l_3$ | $\emptyset d_2$ | $\square$ |      |               | Rekord<br>1A-Z<br>TICN | Rekord<br>1A-Z-IKZ<br>TICN | Rekord<br>1A-Z-IKZN<br>TICN | Rekord<br>1A-Z/E<br>TICN |
|-----------------------|---------|-------|-------|-------|-----------------|-----------|------|---------------|------------------------|----------------------------|-----------------------------|--------------------------|
| <b>M</b> 1            | 0,25    | 40    | 2,5   | –     | 2,5             | 2,1       | 0,75 |               |                        |                            |                             |                          |
| 1,1                   | 0,25    | 40    | 2,5   | –     | 2,5             | 2,1       | 0,85 |               |                        |                            |                             |                          |
| 1,2                   | 0,25    | 40    | 2,5   | –     | 2,5             | 2,1       | 0,95 |               |                        |                            |                             |                          |
| 1,4                   | 0,3     | 40    | 3     | –     | 2,5             | 2,1       | 1,1  |               |                        |                            |                             |                          |
| 1,6                   | 0,35    | 40    | 4     | 11    | 2,5             | 2,1       | 1,25 |               |                        |                            |                             |                          |
| 1,7                   | 0,35    | 40    | 4     | 11    | 2,5             | 2,1       | 1,35 |               |                        |                            |                             |                          |
| 1,8                   | 0,35    | 40    | 4     | 11    | 2,5             | 2,1       | 1,45 |               |                        |                            |                             |                          |
| 2                     | 0,4     | 45    | 4     | 12    | 2,8             | 2,1       | 1,6  |               |                        |                            |                             |                          |
| 2,2                   | 0,45    | 45    | 4,5   | 12    | 2,8             | 2,1       | 1,75 |               |                        |                            |                             |                          |
| 2,3                   | 0,4     | 45    | 4,5   | 12    | 2,8             | 2,1       | 1,9  |               |                        |                            |                             |                          |
| 2,5                   | 0,45    | 50    | 5     | 14    | 2,8             | 2,1       | 2,05 |               |                        |                            |                             |                          |
| 2,6                   | 0,45    | 50    | 5     | 14    | 2,8             | 2,1       | 2,15 |               |                        |                            |                             |                          |
| 3                     | 0,5     | 56    | 6     | 18    | 3,5             | 2,7       | 2,5  | B0109401.0030 |                        |                            |                             | B0119401.0030            |
| 3,5                   | 0,6     | 56    | 7     | 20    | 4               | 3         | 2,9  |               |                        |                            |                             |                          |
| 4                     | 0,7     | 63    | 7     | 21    | 4,5             | 3,4       | 3,3  | B0109401.0040 | B1959401.0040          |                            |                             | B0119401.0040            |
| 4,5                   | 0,75    | 70    | 8     | 25    | 6               | 4,9       | 3,7  |               |                        |                            |                             |                          |
| 5                     | 0,8     | 70    | 8     | 25    | 6               | 4,9       | 4,2  | B0109401.0050 | B1959401.0050          | B1069401.0050              |                             | B0119401.0050            |
| 5,5                   | 0,9     | 80    | 10    | 30    | 6               | 4,9       | 4,6  |               |                        |                            |                             |                          |
| 6                     | 1       | 80    | 10    | 30    | 6               | 4,9       | 5    | B0109401.0060 | B1959401.0060          | B1069401.0060              |                             | B0119401.0060            |
| 7                     | 1       | 80    | 10    | 30    | 7               | 5,5       | 6    |               |                        |                            |                             |                          |
| 8                     | 1,25    | 90    | 14    | 35    | 8               | 6,2       | 6,8  | B0109401.0080 | B1959401.0080          | B1069401.0080              |                             | B0119401.0080            |
| 9                     | 1,25    | 90    | 14    | 35    | 9               | 7         | 7,8  |               |                        |                            |                             |                          |
| 10                    | 1,5     | 100   | 16    | 39    | 10              | 8         | 8,5  | B0109401.0100 | B1959401.0100          | B1069401.0100              |                             | B0119401.0100            |
| 12                    | 1,75    | 110   | 18    | 44    | 12              | 9         | 10,2 |               |                        |                            |                             |                          |
| DIN 376               |         |       |       |       |                 |           |      | » 133         | » 133                  | » 133                      | » 133                       | » 133                    |
| DIN 352               |         |       |       |       |                 |           |      |               |                        |                            |                             |                          |

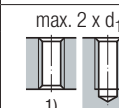
1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

**Z**  
CNC-controlled  
machines

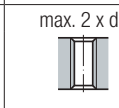
6HX  
TICN  
HSSE

C / 2-3  
E / O / P

K 1.1-4.2  
N 1.5-1.6, 2.6  
N 4.1

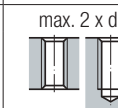
6HX  
TICN  
HSSE

C / 2-3  
E / O

K 1.1-4.2  
N 1.5-1.6, 2.6  
N 4.1

6HX  
TICN  
HSSE

C / 2-3  
E / O

K 1.1-4.2  
N 1.5-1.6, 2.6  
N 4.1

6HX  
TICN  
HSSE

E / 1,5-2  
E / O / P

K 1.1-4.2  
N 1.5-1.6, 2.6  
N 4.1

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

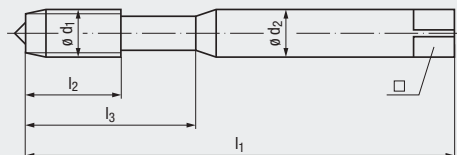
Zubehör

Accessories





DIN 13



DIN  
371

Z  
CNC-controlled  
machines



6HX  
TICN  
HSSE

E / 1,5-2  
E / 0

6HX  
TICN  
HSSE

E / 1,5-2  
E / 0

6HX  
TIN-70  
HSSE-PM

B / 4-5  
E / 0 / P

6HX  
GLT-1  
HSSE-PM

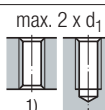
B / 4-5  
E / 0 / P

Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 78

K 1.1-4.2  
N 1.5-1.6, 2.6  
N 4.1

K 1.1-4.2  
N 1.5-1.6, 2.6  
N 4.1

P 2.1-5.1

P 1.1-5.1  
M 1.1-4.1  
K 1.1-3.2  
N 1.4, 2.1-2.2  
N 2.4-2.5  
S 1.1, 2.2-2.3

| $\phi d_1$<br>mm | P<br>mm | $l_1$ | $l_2$ | $l_3$ | $\phi d_2$ | $\square$ |      | Rekord<br>1A-Z/E-1KZ<br>TICN | Rekord<br>1A-Z/E-1KZN<br>TICN | Rekord<br>1B-Z<br>PM-TIN-70    | Rekord<br>1B-Z<br>PM-GLT-1     |
|------------------|---------|-------|-------|-------|------------|-----------|------|------------------------------|-------------------------------|--------------------------------|--------------------------------|
| <b>M</b> 1       | 0,25    | 40    | 2,5   | —     | 2,5        | 2,1       | 0,75 |                              |                               |                                |                                |
| 1,1              | 0,25    | 40    | 2,5   | —     | 2,5        | 2,1       | 0,85 |                              |                               |                                |                                |
| 1,2              | 0,25    | 40    | 2,5   | —     | 2,5        | 2,1       | 0,95 |                              |                               |                                |                                |
| 1,4              | 0,3     | 40    | 3     | —     | 2,5        | 2,1       | 1,1  |                              |                               |                                |                                |
| 1,6              | 0,35    | 40    | 4     | 11    | 2,5        | 2,1       | 1,25 |                              |                               |                                |                                |
| 1,7              | 0,35    | 40    | 4     | 11    | 2,5        | 2,1       | 1,35 |                              |                               |                                |                                |
| 1,8              | 0,35    | 40    | 4     | 11    | 2,5        | 2,1       | 1,45 |                              |                               |                                |                                |
| 2                | 0,4     | 45    | 4     | 12    | 2,8        | 2,1       | 1,6  |                              |                               | B0208F01.0020                  | B020A601.0020                  |
| 2,2              | 0,45    | 45    | 4,5   | 12    | 2,8        | 2,1       | 1,75 |                              |                               |                                |                                |
| 2,3              | 0,4     | 45    | 4,5   | 12    | 2,8        | 2,1       | 1,9  |                              |                               |                                |                                |
| 2,5              | 0,45    | 50    | 5     | 14    | 2,8        | 2,1       | 2,05 |                              |                               | B0208F01.0025                  | B020A601.0025                  |
| 2,6              | 0,45    | 50    | 5     | 14    | 2,8        | 2,1       | 2,15 |                              |                               |                                |                                |
| 3                | 0,5     | 56    | 6     | 18    | 3,5        | 2,7       | 2,5  |                              |                               | B0208F01.0030<br>B0208F01.0035 | B020A601.0030<br>B020A601.0035 |
| 3,5              | 0,6     | 56    | 7     | 20    | 4          | 3         | 2,9  |                              |                               | B0208F01.0040                  | B020A601.0040                  |
| 4                | 0,7     | 63    | 7     | 21    | 4,5        | 3,4       | 3,3  | B1969401.0040                |                               |                                |                                |
| 4,5              | 0,75    | 70    | 8     | 25    | 6          | 4,9       | 3,7  |                              |                               |                                |                                |
| 5                | 0,8     | 70    | 8     | 25    | 6          | 4,9       | 4,2  | B1969401.0050                | B1099401.0050                 | B0208F01.0050                  | B020A601.0050                  |
| 5,5              | 0,9     | 80    | 10    | 30    | 6          | 4,9       | 4,6  |                              |                               |                                |                                |
| 6                | 1       | 80    | 10    | 30    | 6          | 4,9       | 5    | B1969401.0060                | B1099401.0060                 | B0208F01.0060                  | B020A601.0060                  |
| 7                | 1       | 80    | 10    | 30    | 7          | 5,5       | 6    |                              |                               |                                |                                |
| 8                | 1,25    | 90    | 14    | 35    | 8          | 6,2       | 6,8  | B1969401.0080                | B1099401.0080                 | B0208F01.0080                  | B020A601.0080                  |
| 9                | 1,25    | 90    | 14    | 35    | 9          | 7         | 7,8  |                              |                               |                                |                                |
| 10               | 1,5     | 100   | 16    | 39    | 10         | 8         | 8,5  | B1969401.0100                | B1099401.0100                 | B0208F01.0100                  | B020A601.0100                  |
| 12               | 1,75    | 110   | 18    | 44    | 12         | 9         | 10,2 |                              |                               |                                |                                |
| DIN 376          |         |       |       |       |            |           |      | 134                          | 134                           | 134                            | 134                            |
| DIN 352          |         |       |       |       |            |           |      |                              |                               |                                |                                |

1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

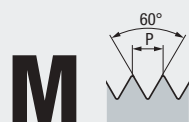
## Z

|                               |          |
|-------------------------------|----------|
| Product Finder                |          |
| <b>V<sub>C</sub></b>          | <b>M</b> |
| <b>MF</b>                     |          |
| <b>UNC</b><br>UN-8            |          |
| <b>UNF</b><br>UNEF            |          |
| <b>G, Rp</b><br>NPSM, NPSF    |          |
| <b>NPT, NPTF</b><br>Rc, W     |          |
| <b>BSW, BSF</b>               |          |
| <b>Pg</b>                     |          |
| <b>MJ</b><br>UNJC, UNJF       |          |
| <b>EG (STI)</b>               |          |
| <b>SELF-LOCK</b>              |          |
| <b>Tr, Tr-F</b><br>Rd         |          |
| <b>Zubehör</b><br>Accessories |          |



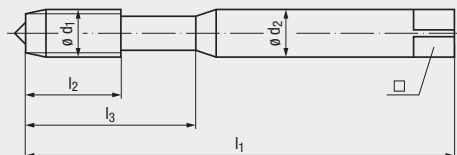


|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



DIN 13

DIN  
371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Z  
CNC-controlled  
machines



6HX  
TIN  
HSSE  
R15  
E / 1,5-2  
E / 0

6HX  
TIN  
HSSE  
R15  
C / 2-3  
E / 0

6HX  
TIN  
HSSE  
R15  
E / 1,5-2  
E / 0

Gewindetiefe und Lochform  
Thread depth and hole type

max. 2 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

» 78

P 3.1-5.1  
N 2.4-2.5

P 3.1-5.1  
N 2.4-2.5

P 3.1-5.1  
N 2.4-2.5

|          | Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |      | Rekord<br>1D-Z/E-IKZ<br>TIN | Rekord<br>1D-Z-BF<br>IKZ-TIN | Rekord<br>1D-Z/E-BF<br>IKZ-TIN |
|----------|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|-----------------------------|------------------------------|--------------------------------|
| <b>M</b> | 1                      | 0,25    | 40             | 2,5            | —              | 2,5              | 2,1 | 0,75 |                             |                              |                                |
|          | 1,1                    | 0,25    | 40             | 2,5            | —              | 2,5              | 2,1 | 0,85 |                             |                              |                                |
|          | 1,2                    | 0,25    | 40             | 2,5            | —              | 2,5              | 2,1 | 0,95 |                             |                              |                                |
|          | 1,4                    | 0,3     | 40             | 3              | —              | 2,5              | 2,1 | 1,1  |                             |                              |                                |
|          | 1,6                    | 0,35    | 40             | 4              | 11             | 2,5              | 2,1 | 1,25 |                             |                              |                                |
|          | 1,7                    | 0,35    | 40             | 4              | 11             | 2,5              | 2,1 | 1,35 |                             |                              |                                |
|          | 1,8                    | 0,35    | 40             | 4              | 11             | 2,5              | 2,1 | 1,45 |                             |                              |                                |
|          | 2                      | 0,4     | 45             | 4              | 12             | 2,8              | 2,1 | 1,6  |                             |                              |                                |
|          | 2,2                    | 0,45    | 45             | 4,5            | 12             | 2,8              | 2,1 | 1,75 |                             |                              |                                |
|          | 2,3                    | 0,4     | 45             | 4,5            | 12             | 2,8              | 2,1 | 1,9  |                             |                              |                                |
|          | 2,5                    | 0,45    | 50             | 5              | 14             | 2,8              | 2,1 | 2,05 |                             |                              |                                |
|          | 2,6                    | 0,45    | 50             | 5              | 14             | 2,8              | 2,1 | 2,15 |                             |                              |                                |
|          | 3                      | 0,5     | 56             | 6              | 18             | 3,5              | 2,7 | 2,5  |                             |                              |                                |
|          | 3,5                    | 0,6     | 56             | 7              | 20             | 4                | 3   | 2,9  |                             |                              |                                |
|          | 4                      | 0,7     | 63             | 7              | 21             | 4,5              | 3,4 | 3,3  | B0983701.0040               | B4253701.0040                | B4053701.0040                  |
|          | 4,5                    | 0,75    | 70             | 8              | 25             | 6                | 4,9 | 3,7  |                             |                              |                                |
|          | 5                      | 0,8     | 70             | 8              | 25             | 6                | 4,9 | 4,2  | B0983701.0050               | B4253701.0050                | B4053701.0050                  |
|          | 5,5                    | 0,9     | 80             | 10             | 30             | 6                | 4,9 | 4,6  |                             |                              |                                |
|          | 6                      | 1       | 80             | 10             | 30             | 6                | 4,9 | 5    | B0983701.0060               | B4253701.0060                | B4053701.0060                  |
|          | 7                      | 1       | 80             | 10             | 30             | 7                | 5,5 | 6    |                             |                              |                                |
|          | 8                      | 1,25    | 90             | 14             | 35             | 8                | 6,2 | 6,8  | B0983701.0080               | B4253701.0080                | B4053701.0080                  |
|          | 9                      | 1,25    | 90             | 14             | 35             | 9                | 7   | 7,8  |                             |                              |                                |
|          | 10                     | 1,5     | 100            | 16             | 39             | 10               | 8   | 8,5  | B0983701.0100               | B4253701.0100                | B4053701.0100                  |
|          | 12                     | 1,75    | 110            | 18             | 44             | 12               | 9   | 10,2 |                             |                              |                                |
| DIN 376  |                        |         |                |                |                |                  |     |      | 136                         | 136                          | 136                            |
| DIN 352  |                        |         |                |                |                |                  |     |      |                             |                              |                                |

Z  
CNC-controlled  
machines

|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |  |  |
| <b>new</b>                                                                        | <b>new</b>                                                                        | <b>new</b>                                                                        | <b>new</b>                                                                        | <b>new</b>                                                                        | <b>new</b>                                                                        | <b>new</b>                                                                          | <b>new</b>                                                                          |
|  |  |  |  |  |  |  |  |
| 6HX                                                                               | 6HX                                                                               | 6HX                                                                               | 6HX                                                                               | 6GX                                                                               | 6GX                                                                               | 6GX                                                                                 | 6GX                                                                                 |
| GLT-1                                                                             | GLT-1                                                                             | GLT-1                                                                             | GLT-1                                                                             | GLT-1                                                                             | GLT-1                                                                             | GLT-1                                                                               | GLT-1                                                                               |
| HSSE-PM                                                                           | HSSE-PM                                                                           | HSSE-PM                                                                           | HSSE-PM                                                                           | HSSE-PM                                                                           | HSSE-PM                                                                           | HSSE-PM                                                                             | HSSE-PM                                                                             |
| R45                                                                               | R45                                                                               | R45                                                                               | R45                                                                               | R45                                                                               | R45                                                                               | R45                                                                                 | R45                                                                                 |
| C / 2-3                                                                           | C / 2-3                                                                           | E / 1,5-2                                                                         | E / 1,5-2                                                                         | C / 2-3                                                                           | C / 2-3                                                                           | E / 1,5-2                                                                           | E / 1,5-2                                                                           |
| E / O / P                                                                         | E / O                                                                             | E / O / P                                                                         | E / O                                                                             | E / O / P                                                                         | E / O                                                                             | E / O / P                                                                           | E / O                                                                               |

max. 3 x d<sub>1</sub>

|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <b>P</b> 1.1-4.1                                                                        | <b>P</b> 1.1-4.1                                                                        | <b>P</b> 1.1-4.1                                                                        | <b>P</b> 1.1-4.1                                                                        | <b>P</b> 1.1-4.1                                                                        | <b>P</b> 1.1-4.1                                                                        | <b>P</b> 1.1-4.1                                                                          | <b>P</b> 1.1-4.1                                                                          |
| <b>M</b> 1.1-4.1                                                                        | <b>M</b> 1.1-4.1                                                                        | <b>M</b> 1.1-4.1                                                                        | <b>M</b> 1.1-4.1                                                                        | <b>M</b> 1.1-4.1                                                                        | <b>M</b> 1.1-4.1                                                                        | <b>M</b> 1.1-4.1                                                                          | <b>M</b> 1.1-4.1                                                                          |
| <b>K</b> 1.1-3.2                                                                        | <b>K</b> 1.1-3.2                                                                        | <b>K</b> 1.1-3.2                                                                        | <b>K</b> 1.1-3.2                                                                        | <b>K</b> 1.1-3.2                                                                        | <b>K</b> 1.1-3.2                                                                        | <b>K</b> 1.1-3.2                                                                          | <b>K</b> 1.1-3.2                                                                          |
| <b>N</b> 1.4, 2.1-2.2                                                                   | <b>N</b> 1.4, 2.1-2.2                                                                   | <b>N</b> 1.4, 2.1-2.2                                                                   | <b>N</b> 1.4, 2.1-2.2                                                                   | <b>N</b> 1.4, 2.1-2.2                                                                   | <b>N</b> 1.4, 2.1-2.2                                                                   | <b>N</b> 1.4, 2.1-2.2                                                                     | <b>N</b> 1.4, 2.1-2.2                                                                     |
| <b>N</b> 2.4-2.5                                                                        | <b>N</b> 2.4-2.5                                                                        | <b>N</b> 2.4-2.5                                                                        | <b>N</b> 2.4-2.5                                                                        | <b>N</b> 2.4-2.5                                                                        | <b>N</b> 2.4-2.5                                                                        | <b>N</b> 2.4-2.5                                                                          | <b>N</b> 2.4-2.5                                                                          |
| <b>S</b> 1.1                                                                            | <b>S</b> 1.1                                                                            | <b>S</b> 1.1                                                                            | <b>S</b> 1.1                                                                            | <b>S</b> 1.1                                                                            | <b>S</b> 1.1                                                                            | <b>S</b> 1.1                                                                              | <b>S</b> 1.1                                                                              |
| Enorm 1-Z PM-GLT-1                                                                      | Enorm 1-Z-IKZ PM-GLT-1                                                                  | Enorm 1-Z/E PM-GLT-1                                                                    | Enorm 1-Z/E-IKZ PM-GLT-1                                                                | Enorm 1-Z PM-GLT-1                                                                      | Enorm 1-Z-IKZ PM-GLT-1                                                                  | Enorm 1-Z/E PM-GLT-1                                                                      | Enorm 1-Z/E-IKZ PM-GLT-1                                                                  |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
| B616A601.0020                                                                           |                                                                                         | B498A601.0020                                                                           |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
| B616A601.0025                                                                           |                                                                                         | B498A601.0025                                                                           |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
| B616A601.0030                                                                           |                                                                                         | B498A601.0030                                                                           |                                                                                         | B616A621.0030                                                                           |                                                                                         | B498A621.0030                                                                             |                                                                                           |
| B616A601.0035                                                                           |                                                                                         | B498A601.0035                                                                           |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
| B616A601.0040                                                                           | B591A601.0040                                                                           | B498A601.0040                                                                           | B590A601.0040                                                                           | B616A621.0040                                                                           | B591A621.0040                                                                           | B498A621.0040                                                                             | B590A621.0040                                                                             |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
| B616A601.0050                                                                           | B591A601.0050                                                                           | B498A601.0050                                                                           | B590A601.0050                                                                           | B616A621.0050                                                                           | B591A621.0050                                                                           | B498A621.0050                                                                             | B590A621.0050                                                                             |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
| B616A601.0060                                                                           | B591A601.0060                                                                           | B498A601.0060                                                                           | B590A601.0060                                                                           | B616A621.0060                                                                           | B591A621.0060                                                                           | B498A621.0060                                                                             | B590A621.0060                                                                             |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
| B616A601.0080                                                                           | B591A601.0080                                                                           | B498A601.0080                                                                           | B590A601.0080                                                                           | B616A621.0080                                                                           | B591A621.0080                                                                           | B498A621.0080                                                                             | B590A621.0080                                                                             |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
| B616A601.0100                                                                           | B591A601.0100                                                                           | B498A601.0100                                                                           | B590A601.0100                                                                           | B616A621.0100                                                                           | B591A621.0100                                                                           | B498A621.0100                                                                             | B590A621.0100                                                                             |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |
|  137 |  137 |  137 |  137 |  137 |  137 |  137 |  137 |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |                                                                                           |

|   |     |
|---|-----|
| M | 1   |
|   | 1,1 |
|   | 1,2 |
|   | 1,4 |
|   | 1,6 |
|   | 1,7 |
|   | 1,8 |
|   | 2   |
|   | 2,2 |
|   | 2,3 |
|   | 2,5 |
|   | 2,6 |
|   | 3   |
|   | 3,5 |
|   | 4   |
|   | 4,5 |
|   | 5   |
|   | 5,5 |
|   | 6   |
|   | 7   |
|   | 8   |
|   | 9   |
|   | 10  |
|   | 12  |

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

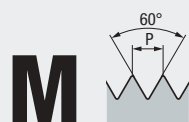
Tr, Tr-F

Rd

Zubehör

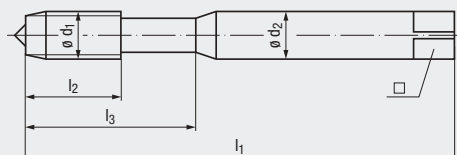
Accessories





DIN 13

DIN  
371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

max. 3 x d<sub>1</sub>



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |     |      | Enorm<br>1-Z         | Enorm<br>1-Z<br>TIN  | Enorm<br>1-Z<br>GLT-1 | Enorm<br>1-Z-<br>IKZ<br>GLT-1 |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|-----|------|----------------------|----------------------|-----------------------|-------------------------------|
| <b>M</b>               | 1       | 0,25           | 40             | 2,5            | —                | 2,5 | 2,1 | 0,75 |                      |                      |                       |                               |
|                        | 1,1     | 0,25           | 40             | 2,5            | —                | 2,5 | 2,1 | 0,85 |                      |                      |                       |                               |
|                        | 1,2     | 0,25           | 40             | 2,5            | —                | 2,5 | 2,1 | 0,95 |                      |                      |                       |                               |
|                        | 1,4     | 0,3            | 40             | 3              | —                | 2,5 | 2,1 | 1,1  | B0503500.0014        |                      |                       |                               |
|                        | 1,6     | 0,35           | 40             | 4              | 11               | 2,5 | 2,1 | 1,25 | B0503500.0016        |                      |                       |                               |
|                        | 1,7     | 0,35           | 40             | 4              | 11               | 2,5 | 2,1 | 1,35 | B0503500.0017        |                      |                       |                               |
|                        | 1,8     | 0,35           | 40             | 4              | 11               | 2,5 | 2,1 | 1,45 | B0503500.0018        |                      |                       |                               |
|                        | 2       | 0,4            | 45             | 4              | 12               | 2,8 | 2,1 | 1,6  | <b>B0503500.0020</b> |                      | <b>B050C400.0020</b>  |                               |
|                        | 2,2     | 0,45           | 45             | 4,5            | 12               | 2,8 | 2,1 | 1,75 | <b>B0503500.0022</b> |                      |                       |                               |
|                        | 2,3     | 0,4            | 45             | 4,5            | 12               | 2,8 | 2,1 | 1,9  | <b>B0503500.0023</b> |                      |                       |                               |
|                        | 2,5     | 0,45           | 50             | 5              | 14               | 2,8 | 2,1 | 2,05 | <b>B0503500.0025</b> |                      | <b>B050C400.0025</b>  |                               |
|                        | 2,6     | 0,45           | 50             | 5              | 14               | 2,8 | 2,1 | 2,15 | <b>B0503500.0026</b> |                      |                       |                               |
|                        | 3       | 0,5            | 56             | 6              | 18               | 3,5 | 2,7 | 2,5  | <b>B0503500.0030</b> | <b>B0503700.0030</b> | <b>B050C400.0030</b>  |                               |
|                        | 3,5     | 0,6            | 56             | 7              | 20               | 4   | 3   | 2,9  | <b>B0503500.0035</b> | <b>B0503700.0035</b> | <b>B050C400.0035</b>  |                               |
|                        | 4       | 0,7            | 63             | 7              | 21               | 4,5 | 3,4 | 3,3  | <b>B0503500.0040</b> | <b>B0503700.0040</b> | <b>B050C400.0040</b>  |                               |
|                        | 4,5     | 0,75           | 70             | 8              | 25               | 6   | 4,9 | 3,7  | <b>B0503500.0045</b> |                      |                       |                               |
|                        | 5       | 0,8            | 70             | 8              | 25               | 6   | 4,9 | 4,2  | <b>B0503500.0050</b> | <b>B0503700.0050</b> | <b>B050C400.0050</b>  | <b>B099C400.0050</b>          |
|                        | 5,5     | 0,9            | 80             | 10             | 30               | 6   | 4,9 | 4,6  | <b>B0503500.0055</b> |                      |                       |                               |
|                        | 6       | 1              | 80             | 10             | 30               | 6   | 4,9 | 5    | <b>B0503500.0060</b> | <b>B0503700.0060</b> | <b>B050C400.0060</b>  | <b>B099C400.0060</b>          |
|                        | 7       | 1              | 80             | 10             | 30               | 7   | 5,5 | 6    | <b>B0503500.0070</b> |                      |                       |                               |
|                        | 8       | 1,25           | 90             | 14             | 35               | 8   | 6,2 | 6,8  | <b>B0503500.0080</b> | <b>B0503700.0080</b> | <b>B050C400.0080</b>  | <b>B099C400.0080</b>          |
|                        | 9       | 1,25           | 90             | 14             | 35               | 9   | 7   | 7,8  | <b>B0503500.0090</b> |                      |                       |                               |
|                        | 10      | 1,5            | 100            | 16             | 39               | 10  | 8   | 8,5  | <b>B0503500.0100</b> | <b>B0503700.0100</b> | <b>B050C400.0100</b>  | <b>B099C400.0100</b>          |
|                        | 12      | 1,75           | 110            | 18             | 44               | 12  | 9   | 10,2 | <b>B0503500.0112</b> |                      |                       |                               |
| DIN 376                |         |                |                |                |                  |     |     |      | 138                  | 138                  | 138                   | 139                           |
| DIN 352                |         |                |                |                |                  |     |     |      |                      |                      |                       |                               |

<sup>\*)</sup> ≤ M1,4 Tol. 4H/5H

**Z**  
CNC-controlled  
machines

|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |  |  |
| ISO 2/6H                                                                          | ISO 2/6H<br>TIN                                                                   | ISO 2/6H<br>GLT-1                                                                 | ISO 2/6H                                                                          | ISO 2/6H<br>TIN                                                                   | ISO 2/6H<br>GLT-1                                                                 | ISO 1/4H                                                                            | ISO 1/4H<br>GLT-1                                                                   |
| HSSE                                                                              | HSSE                                                                              | HSSE                                                                              | HSSE                                                                              | HSSE                                                                              | HSSE                                                                              | HSSE                                                                                | HSSE                                                                                |
| R45                                                                               | R45                                                                               | R45                                                                               | R45                                                                               | R45                                                                               | R45                                                                               | R45                                                                                 | R45                                                                                 |
| E / 1,5-2                                                                         | E / 1,5-2                                                                         | E / 1,5-2                                                                         | E / 1,5-2                                                                         | E / 1,5-2                                                                         | E / 1,5-2                                                                         | C / 2-3                                                                             | C / 2-3                                                                             |
| E / O / P                                                                         | E / O / P                                                                         | E / O / P                                                                         | E / O                                                                             | E / O                                                                             | E / O                                                                             | E / O / P                                                                           | E / O / P                                                                           |

max. 3 x d<sub>1</sub>

|                  |                                                           |                                                                                                   |                  |                                                           |                                                                                                   |                  |                                                                                                   |
|------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------|
| <b>P</b> 1.1-3.1 | <b>P</b> 1.1-4.1<br><b>N</b> 2.2, 2.4-2.5<br><b>S</b> 1.1 | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1 | <b>P</b> 1.1-3.1 | <b>P</b> 1.1-4.1<br><b>N</b> 2.2, 2.4-2.5<br><b>S</b> 1.1 | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1 | <b>P</b> 1.1-3.1 | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1 |
| Enorm 1-Z/E      | Enorm 1-Z/E<br>TIN                                        | Enorm 1-Z/E<br>GLT-1                                                                              | Enorm 1-Z/E-IKZ  | Enorm 1-Z/E-IKZ<br>TIN                                    | Enorm 1-Z/E-IKZ<br>GLT-1                                                                          | Enorm 1-Z        | Enorm 1-Z<br>GLT-1                                                                                |
| B0513500.0020    |                                                           |                                                                                                   |                  |                                                           |                                                                                                   | B0503510.0020    |                                                                                                   |
| B0513500.0025    |                                                           |                                                                                                   |                  |                                                           |                                                                                                   | B0503510.0025    |                                                                                                   |
| B0513500.0030    | B0513700.0030                                             | B051C400.0030                                                                                     |                  |                                                           |                                                                                                   | B0503510.0030    | B050C410.0030                                                                                     |
| B0513500.0035    | B0513700.0035                                             |                                                                                                   |                  |                                                           |                                                                                                   |                  |                                                                                                   |
| B0513500.0040    | B0513700.0040                                             | B051C400.0040                                                                                     |                  |                                                           |                                                                                                   | B0503510.0040    | B050C410.0040                                                                                     |
| B0513500.0050    | B0513700.0050                                             | B051C400.0050                                                                                     | B0973500.0050    | B0973700.0050                                             | B097C400.0050                                                                                     | B0503510.0050    | B050C410.0050                                                                                     |
| B0513500.0060    | B0513700.0060                                             | B051C400.0060                                                                                     | B0973500.0060    | B0973700.0060                                             | B097C400.0060                                                                                     | B0503510.0060    | B050C410.0060                                                                                     |
| B0513500.0070    |                                                           |                                                                                                   |                  |                                                           |                                                                                                   |                  |                                                                                                   |
| B0513500.0080    | B0513700.0080                                             | B051C400.0080                                                                                     | B0973500.0080    | B0973700.0080                                             | B097C400.0080                                                                                     | B0503510.0080    | B050C410.0080                                                                                     |
| B0513500.0100    | B0513700.0100                                             | B051C400.0100                                                                                     | B0973500.0100    | B0973700.0100                                             | B097C400.0100                                                                                     | B0503510.0100    | B050C410.0100                                                                                     |
| 139              | 139                                                       | 139                                                                                               |                  | 139                                                       | 139                                                                                               | 139              | 139                                                                                               |
| 151              |                                                           |                                                                                                   |                  |                                                           |                                                                                                   |                  |                                                                                                   |

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

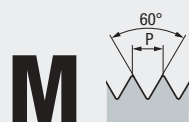
Pg

MJ  
UNJC, UNJF

EG (STI)

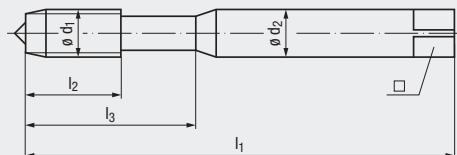
SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories



DIN 13

DIN  
371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Z  
CNC-controlled  
machines



new



new



| ISO 3/6G  | ISO 3/6G  | ISO 3/6G  | ISO 3/6G  |
|-----------|-----------|-----------|-----------|
| HSSE      | GLT-1     | HSSE      | TIN       |
| R45       | HSSE      | HSSE      | HSSE      |
| C / 2-3   | R45       | R45       | R45       |
| E / 0 / P | C / 2-3   | E / 1,5-2 | E / 1,5-2 |
|           | E / 0 / P | E / 0 / P | E / 0 / P |

max. 3 x d<sub>1</sub>



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

|           |                                                                |           |                                      |
|-----------|----------------------------------------------------------------|-----------|--------------------------------------|
| P 1.1-3.1 | P 1.1-4.1<br>M 1.1-4.1<br>N 1.4, 2.1-2.2<br>N 2.4-2.5<br>S 1.1 | P 1.1-3.1 | P 1.1-4.1<br>N 2.2, 2.4-2.5<br>S 1.1 |
|-----------|----------------------------------------------------------------|-----------|--------------------------------------|

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |      | Enorm<br>1-Z  | Enorm<br>1-Z<br>GLT-1 | Enorm<br>1-Z/E | Enorm<br>1-Z/E<br>TIN |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|---------------|-----------------------|----------------|-----------------------|
| <b>M</b> 1             | 0,25    | 40             | 2,5            | —              | 2,5              | 2,1 | 0,75 |               |                       |                |                       |
| 1,1                    | 0,25    | 40             | 2,5            | —              | 2,5              | 2,1 | 0,85 |               |                       |                |                       |
| 1,2                    | 0,25    | 40             | 2,5            | —              | 2,5              | 2,1 | 0,95 |               |                       |                |                       |
| 1,4                    | 0,3     | 40             | 3              | —              | 2,5              | 2,1 | 1,1  |               |                       |                |                       |
| 1,6                    | 0,35    | 40             | 4              | 11             | 2,5              | 2,1 | 1,25 |               |                       |                |                       |
| 1,7                    | 0,35    | 40             | 4              | 11             | 2,5              | 2,1 | 1,35 |               |                       |                |                       |
| 1,8                    | 0,35    | 40             | 4              | 11             | 2,5              | 2,1 | 1,45 |               |                       |                |                       |
| 2                      | 0,4     | 45             | 4              | 12             | 2,8              | 2,1 | 1,6  | B0503520.0020 | B050C420.0020         | B0513520.0020  |                       |
| 2,2                    | 0,45    | 45             | 4,5            | 12             | 2,8              | 2,1 | 1,75 |               |                       |                |                       |
| 2,3                    | 0,4     | 45             | 4,5            | 12             | 2,8              | 2,1 | 1,9  |               |                       |                |                       |
| 2,5                    | 0,45    | 50             | 5              | 14             | 2,8              | 2,1 | 2,05 | B0503520.0025 | B050C420.0025         | B0513520.0025  |                       |
| 2,6                    | 0,45    | 50             | 5              | 14             | 2,8              | 2,1 | 2,15 |               |                       |                |                       |
| 3                      | 0,5     | 56             | 6              | 18             | 3,5              | 2,7 | 2,5  | B0503520.0030 | B050C420.0030         | B0513520.0030  | B0513720.0030         |
| 3,5                    | 0,6     | 56             | 7              | 20             | 4                | 3   | 2,9  |               |                       |                |                       |
| 4                      | 0,7     | 63             | 7              | 21             | 4,5              | 3,4 | 3,3  | B0503520.0040 | B050C420.0040         | B0513520.0040  | B0513720.0040         |
| 4,5                    | 0,75    | 70             | 8              | 25             | 6                | 4,9 | 3,7  |               |                       |                |                       |
| 5                      | 0,8     | 70             | 8              | 25             | 6                | 4,9 | 4,2  | B0503520.0050 | B050C420.0050         | B0513520.0050  | B0513720.0050         |
| 5,5                    | 0,9     | 80             | 10             | 30             | 6                | 4,9 | 4,6  |               |                       |                |                       |
| 6                      | 1       | 80             | 10             | 30             | 6                | 4,9 | 5    | B0503520.0060 | B050C420.0060         | B0513520.0060  | B0513720.0060         |
| 7                      | 1       | 80             | 10             | 30             | 7                | 5,5 | 6    |               |                       |                |                       |
| 8                      | 1,25    | 90             | 14             | 35             | 8                | 6,2 | 6,8  | B0503520.0080 | B050C420.0080         | B0513520.0080  | B0513720.0080         |
| 9                      | 1,25    | 90             | 14             | 35             | 9                | 7   | 7,8  |               |                       |                |                       |
| 10                     | 1,5     | 100            | 16             | 39             | 10               | 8   | 8,5  | B0503520.0100 | B050C420.0100         | B0513520.0100  | B0513720.0100         |
| 12                     | 1,75    | 110            | 18             | 44             | 12               | 9   | 10,2 |               |                       |                |                       |
| DIN 376                |         |                |                |                |                  |     |      | 140           | 140                   | 140            | 140                   |
| DIN 352                |         |                |                |                |                  |     |      |               |                       |                |                       |

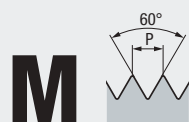
| Z<br>CNC-controlled machines                                                            |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   |     |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---|-----|
|        |        |        |        |        |        |        |   |     |
| <b>new</b>                                                                              | <b>new</b>                                                                              | <b>new</b>                                                                              | <b>new</b>                                                                              | <b>new</b>                                                                              | <b>new</b>                                                                              | <b>new</b>                                                                                |   |     |
|        |        |        |        |        |        |        |   |     |
| ISO 3/6G                                                                                | 7G                                                                                      | 7G                                                                                      | 6H +0,1 2)                                                                              | 6H +0,1 2)                                                                              | ISO 2/6H                                                                                | ISO 2/6H                                                                                  |   |     |
| GLT-1                                                                                   |                                                                                         | GLT-1                                                                                   |                                                                                         | GLT-1                                                                                   |                                                                                         | GLT-1                                                                                     |   |     |
| HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                      |   |     |
| R45                                                                                     | R45                                                                                     | R45                                                                                     | R45                                                                                     | R45                                                                                     | LH, L45                                                                                 | LH, L45                                                                                   |   |     |
| E / 1,5-2                                                                               | C / 2-3                                                                                 | C / 2-3                                                                                 | C / 2-3                                                                                 | C / 2-3                                                                                 | C / 2-3                                                                                 | C / 2-3                                                                                   |   |     |
| E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                                 |   |     |
| max. 3 x d <sub>1</sub>                                                                 |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   |     |
|       |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   |     |
| P 1.1-4.1                                                                               | P 1.1-3.1                                                                               | P 1.1-4.1                                                                               | P 1.1-3.1                                                                               | P 1.1-4.1                                                                               | P 1.1-3.1                                                                               | P 1.1-4.1                                                                                 |   |     |
| M 1.1-4.1                                                                               |                                                                                         | M 1.1-4.1                                                                               |                                                                                         | M 1.1-4.1                                                                               |                                                                                         | M 1.1-4.1                                                                                 |   |     |
| N 1.4, 2.1-2.2                                                                          |                                                                                         | N 1.4, 2.1-2.2                                                                          |                                                                                         | N 1.4, 2.1-2.2                                                                          |                                                                                         | N 1.4, 2.1-2.2                                                                            |   |     |
| N 2.4-2.5                                                                               |                                                                                         | N 2.4-2.5                                                                               |                                                                                         | N 2.4-2.5                                                                               |                                                                                         | N 2.4-2.5                                                                                 |   |     |
| S 1.1                                                                                   |                                                                                         | S 1.1                                                                                   |                                                                                         | S 1.1                                                                                   |                                                                                         | S 1.1                                                                                     |   |     |
| Enorm 1-Z/E GLT-1                                                                       | Enorm 1-Z                                                                               | Enorm 1-Z GLT-1                                                                         | Enorm 1-Z                                                                               | Enorm 1-Z GLT-1                                                                         | Enorm 1-Z-LH                                                                            | Enorm 1-Z-LH GLT-1                                                                        |   |     |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           | M | 1   |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   | 1,1 |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   | 1,2 |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   | 1,4 |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   | 1,6 |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   | 1,7 |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   | 1,8 |
|                                                                                         | B0503530.0020                                                                           | B050C430.0020                                                                           |                                                                                         |                                                                                         | B0503550.0020                                                                           |                                                                                           |   | 2   |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   | 2,2 |
|                                                                                         | B0503530.0025                                                                           | B050C430.0025                                                                           |                                                                                         |                                                                                         | B0503550.0025                                                                           |                                                                                           |   | 2,3 |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   | 2,5 |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   | 2,6 |
| B051C420.0030                                                                           | B0503530.0030                                                                           | B050C430.0030                                                                           | B0503540.0030                                                                           | B050C440.0030                                                                           | B0503550.0030                                                                           | B050C450.0030                                                                             |   | 3   |
| B051C420.0040                                                                           | B0503530.0040                                                                           | B050C430.0040                                                                           | B0503540.0040                                                                           | B050C440.0040                                                                           | B0503550.0040                                                                           | B050C450.0040                                                                             |   | 3,5 |
| B051C420.0050                                                                           | B0503530.0050                                                                           | B050C430.0050                                                                           | B0503540.0050                                                                           | B050C440.0050                                                                           | B0503550.0050                                                                           | B050C450.0050                                                                             |   | 4   |
| B051C420.0060                                                                           | B0503530.0060                                                                           | B050C430.0060                                                                           |                                                                                         |                                                                                         | B0503550.0060                                                                           | B050C450.0060                                                                             |   | 4,5 |
| B051C420.0080                                                                           | B0503530.0080                                                                           | B050C430.0080                                                                           |                                                                                         |                                                                                         | B0503550.0080                                                                           | B050C450.0080                                                                             |   | 5   |
| B051C420.0100                                                                           | B0503530.0100                                                                           | B050C430.0100                                                                           |                                                                                         |                                                                                         | B0503550.0100                                                                           | B050C450.0100                                                                             |   | 5,5 |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   | 6   |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   | 7   |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   | 8   |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   | 9   |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   | 10  |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |   | 12  |
|  141 |  141 |  141 |  141 |  141 |  141 |  141 |   |     |

2) Vorbohrdurchmesser für Gewindebohrer mit Übermaß um 0,1 mm anheben  
Increase drill diameter for taps with oversize by 0.1 mm



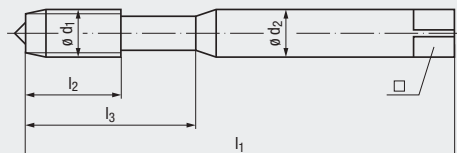


|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



DIN 13

DIN  
371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Z  
CNC-controlled  
machines



new



6HX

6HX

HSSE

HSSE

R50

R50

C / 2-3

C / 2-3

E / O / P

E / O / P

Gewindetiefe und Lochform  
Thread depth and hole type

max. 3 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

» 78

P 1.1-3.1

P 1.1-4.1

M 1.1-4.1

N 1.4, 2.1-2.2

N 2.4-2.5

S 1.1

Enorm  
1-Z50

Enorm  
1-Z50  
GLT-1

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |      |               | Enorm<br>1-Z50 | Enorm<br>1-Z50<br>GLT-1 |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|---------------|----------------|-------------------------|
| <b>M</b> 1             | 0,25    | 40             | 2,5            | —              | 2,5              | 2,1 | 0,75 |               |                |                         |
| 1,1                    | 0,25    | 40             | 2,5            | —              | 2,5              | 2,1 | 0,85 |               |                |                         |
| 1,2                    | 0,25    | 40             | 2,5            | —              | 2,5              | 2,1 | 0,95 |               |                |                         |
| 1,4                    | 0,3     | 40             | 3              | —              | 2,5              | 2,1 | 1,1  |               |                |                         |
| 1,6                    | 0,35    | 40             | 4              | 11             | 2,5              | 2,1 | 1,25 |               |                |                         |
| 1,7                    | 0,35    | 40             | 4              | 11             | 2,5              | 2,1 | 1,35 |               |                |                         |
| 1,8                    | 0,35    | 40             | 4              | 11             | 2,5              | 2,1 | 1,45 |               |                |                         |
| 2                      | 0,4     | 45             | 4              | 12             | 2,8              | 2,1 | 1,6  | B0653501.0020 |                |                         |
| 2,2                    | 0,45    | 45             | 4,5            | 12             | 2,8              | 2,1 | 1,75 |               |                |                         |
| 2,3                    | 0,4     | 45             | 4,5            | 12             | 2,8              | 2,1 | 1,9  |               |                |                         |
| 2,5                    | 0,45    | 50             | 5              | 14             | 2,8              | 2,1 | 2,05 | B0653501.0025 |                |                         |
| 2,6                    | 0,45    | 50             | 5              | 14             | 2,8              | 2,1 | 2,15 |               |                |                         |
| 3                      | 0,5     | 56             | 6              | 18             | 3,5              | 2,7 | 2,5  | B0653501.0030 | B065C401.0030  |                         |
| 3,5                    | 0,6     | 56             | 7              | 20             | 4                | 3   | 2,9  |               |                |                         |
| 4                      | 0,7     | 63             | 7              | 21             | 4,5              | 3,4 | 3,3  | B0653501.0040 | B065C401.0040  |                         |
| 4,5                    | 0,75    | 70             | 8              | 25             | 6                | 4,9 | 3,7  |               |                |                         |
| 5                      | 0,8     | 70             | 8              | 25             | 6                | 4,9 | 4,2  | B0653501.0050 | B065C401.0050  |                         |
| 5,5                    | 0,9     | 80             | 10             | 30             | 6                | 4,9 | 4,6  |               |                |                         |
| 6                      | 1       | 80             | 10             | 30             | 6                | 4,9 | 5    | B0653501.0060 | B065C401.0060  |                         |
| 7                      | 1       | 80             | 10             | 30             | 7                | 5,5 | 6    |               |                |                         |
| 8                      | 1,25    | 90             | 14             | 35             | 8                | 6,2 | 6,8  | B0653501.0080 | B065C401.0080  |                         |
| 9                      | 1,25    | 90             | 14             | 35             | 9                | 7   | 7,8  |               |                |                         |
| 10                     | 1,5     | 100            | 16             | 39             | 10               | 8   | 8,5  | B0653501.0100 | B065C401.0100  |                         |
| 12                     | 1,75    | 110            | 18             | 44             | 12               | 9   | 10,2 |               |                |                         |

DIN 376



142

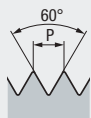
142

DIN 352

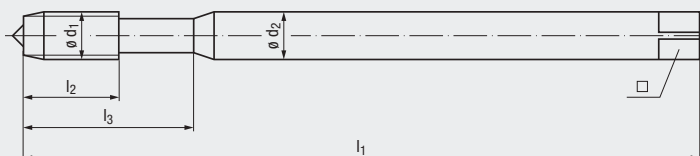


**M**

DIN 13



Mit extra langem Schaft  
With extra long shank



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| $\varnothing d_1$<br>mm | P<br>mm | $l_1$ | $l_2$ | $l_3$ | $\varnothing d_2$ | $\square$ |     | Rekord<br>1B-STEEL-L<br>LS | Rekord<br>1D-STEEL/E<br>LS | Rekord<br>1DF-STEEL<br>LS-TIN |
|-------------------------|---------|-------|-------|-------|-------------------|-----------|-----|----------------------------|----------------------------|-------------------------------|
| <b>M</b> 3              | 0,5     | 100   | 11    | 18    | 3,5               | 2,7       | 2,5 | B2208900.0030              | B2461000.0030              | B2401400.0030                 |
| 4                       | 0,7     | 125   | 13    | 21    | 4,5               | 3,4       | 3,3 | B2208900.0040              | B2461000.0040              | B2401400.0040                 |
| 5                       | 0,8     | 140   | 15    | 25    | 6                 | 4,9       | 4,2 | B2208900.0050              | B2461000.0050              | B2401400.0050                 |
| 6                       | 1       | 160   | 17    | 30    | 6                 | 4,9       | 5   | B2208900.0060              | B2461000.0060              | B2401400.0060                 |
| 8                       | 1,25    | 180   | 20    | 35    | 8                 | 6,2       | 6,8 | B2208900.0080              | B2461000.0080              | B2401400.0080                 |
| 10                      | 1,5     | 200   | 22    | 39    | 10                | 8         | 8,5 |                            |                            | B2401400.0100                 |
|                         |         |       |       |       |                   |           |     | 143                        | 143                        | 143                           |

1) Ab M4 auch mit innerer Kühlschmierstoff-Zufuhr IKZ möglich  
From M4 also available with internal coolant supply IKZ

2) Ab M5 auch mit innerer Kühlschmierstoff-Zufuhr IKZN möglich  
From M5 also available with internal coolant supply IKZN

**STEEL**  
Steel  
materials


new



2)



1)



1)

ISO 2/6H

HSSE

B / 4-5

E / 0

max. 3 x  $d_1$ 

**P** 1.1-3.1  
**N** 2.2

ISO 2/6H

HSSE

R15

**E / 1,5-2**

E / 0

max. 2 x  $d_1$ 

**P** 2.1-3.1

**P** 3.1-4.1

Product  
Finder

V<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

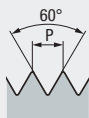
Accessories



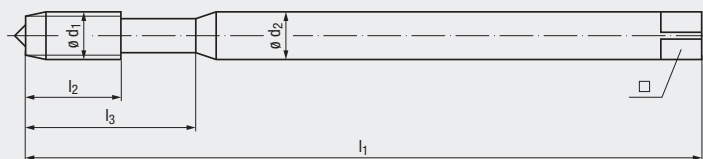
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# M

DIN 13



Mit extra langem Schaft  
With extra long shank



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material



VA  
Stainless steel  
materials



2)



2)



1)

$l_2 \approx 10 \times P$

ISO 2/6H  
NT  
HSSE

B / 4-5  
E / O / P

ISO 2/6H  
GLT-1  
HSSE

B / 4-5  
E / O / P

ISO 2/6H  
HSSE  
R35  
C / 2-3  
E / O / P

max.  $3 \times d_1$



max.  $2,5 \times d_1$



P 2.1-3.1  
N 2.2, 2.5

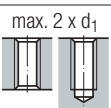
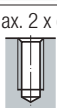
P 1.1-4.1  
M 1.1-4.1  
N 2.2

P 1.1-3.1

| $\emptyset d_1$<br>mm                                                               | P<br>mm | $l_1$ | $l_2$ | $l_3$ | $\emptyset d_2$ | $\square$ |  | Rekord<br>1B-VA<br>LS-NT                                                                | Rekord<br>1B-VA<br>LS-GLT-1                                                               | Enorm<br>1-VA<br>LS                                                                       |
|-------------------------------------------------------------------------------------|---------|-------|-------|-------|-----------------|-----------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <b>M</b> 3                                                                          | 0,5     | 100   | 11    | 18    | 3,5             | 2,7       | 2,5                                                                                 | B2203000.0030                                                                           | B220C300.0030                                                                             | B2503000.0030                                                                             |
| 4                                                                                   | 0,7     | 125   | 13    | 21    | 4,5             | 3,4       | 3,3                                                                                 | B2203000.0040                                                                           | B220C300.0040                                                                             | B2503000.0040                                                                             |
| 5                                                                                   | 0,8     | 140   | 15    | 25    | 6               | 4,9       | 4,2                                                                                 | B2203000.0050                                                                           | B220C300.0050                                                                             | B2503000.0050                                                                             |
| 6                                                                                   | 1       | 160   | 17    | 30    | 6               | 4,9       | 5                                                                                   | B2203000.0060                                                                           | B220C300.0060                                                                             | B2503000.0060                                                                             |
| 8                                                                                   | 1,25    | 180   | 20    | 35    | 8               | 6,2       | 6,8                                                                                 | B2203000.0080                                                                           | B220C300.0080                                                                             | B2503000.0080                                                                             |
| 10                                                                                  | 1,5     | 200   | 22    | 39    | 10              | 8         | 8,5                                                                                 |                                                                                         |                                                                                           |                                                                                           |
|  |         |       |       |       |                 |           |                                                                                     |  144 |  144 |  144 |

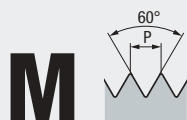
1) Ab M4 auch mit innerer Kühlschmierstoff-Zufuhr IKZ möglich  
From M4 also available with internal coolant supply IKZ

2) Ab M5 auch mit innerer Kühlschmierstoff-Zufuhr IKZN möglich  
From M5 also available with internal coolant supply IKZN

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| <div>H</div> <div>Materials of high tensile strength</div> <div></div> <div></div> <div>1) 2)</div>                                                                                                                                                                                                                                                           |  | <div>Z</div> <div>CNC-controlled machines</div> <div></div> <div></div> <div><div>new</div></div> <div></div> <div><div>new</div></div> <div></div> <div>1)</div> |                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |  |  |
| <div>6HX</div> <div>NT</div> <div>HSSE</div> <div>C / 2-3</div> <div>E / O / P</div> <div></div> <div><div>K</div><div>1.1-4.2</div></div> <div><div>N</div><div>4.1</div></div> <div>Rekord 1A-H LS-NT</div> <div>B2100501.0030</div> <div>B2100501.0040</div> <div>B2100501.0050</div> <div>B2100501.0060</div> <div>B2100501.0080</div> <div> 145</div> |  | <div>6HX</div> <div>TIN</div> <div>HSSE</div> <div>R15</div> <div>C / 2-3</div> <div>E / O</div> <div></div> <div><div>P</div><div>3.1-5.1</div></div> <div><div>N</div><div>2.4-2.5</div></div> <div>Rekord 1D-Z-BF-IKZ LS-TIN</div> <div>B4093701.0040</div> <div>B4093701.0050</div> <div>B4093701.0060</div> <div>B4093701.0080</div> <div>B4093701.0100</div> <div> 145</div>                                                                                                                   | <div>ISO 2/6H</div> <div>HSSE</div> <div>R45</div> <div>C / 2-3</div> <div>E / O / P</div> <div></div> <div><div>P</div><div>1.1-3.1</div></div> <div> 145</div> | <div>ISO 2/6H</div> <div>GLT-1</div> <div>HSSE</div> <div>R45</div> <div>C / 2-3</div> <div>E / O / P</div> <div></div> <div><div>P</div><div>1.1-4.1</div></div> <div><div>M</div><div>1.1-4.1</div></div> <div><div>N</div><div>1.4, 2.1-2.2</div></div> <div><div>N</div><div>2.4-2.5</div></div> <div><div>S</div><div>1.1</div></div> <div>Enorm 1-Z-LS GLT-1</div> <div>B2503500.0030</div> <div>B2503500.0040</div> <div>B2503500.0050</div> <div>B2503500.0060</div> <div>B2503500.0080</div> <div> 145</div> |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |  |  |
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Spezial-Schaftverlängerungen zur Aufnahme von Standard-Gewindebohrern siehe Seite 302 - 304  
Special shank extensions for using standard taps, see page 302 - 304

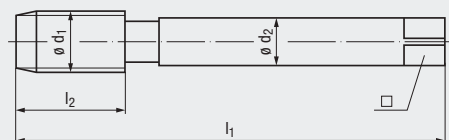


DIN 13

DIN  
376

## STEEL

### Steel materials



Toleranz · Tolerance

Beschichtung · Coating

Schneidstoff · Cutting material

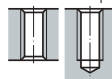


## Technische Informationen

**Gewindetiefe und Lochform**  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

78

 $\max. 2 \times d_1$ 
$$\max. 3 \times d_1$$


|          |         |
|----------|---------|
| <b>K</b> | 1.1-4.2 |
| <b>N</b> | 2.3     |

|          |                |
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| <b>P</b> | <b>1.1-3.1</b> |
| <b>N</b> | <b>2.2</b>     |

**P 1.1-4.1**

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| <b>N</b> | <b>2.2</b>     |

|                                                                                             |         |                |                |                  |     |                                                                                     |      | Rekord<br>2A-STEEL                                                                      | Rekord<br>2B-STEEL-L                                                                      | Rekord<br>2B-STEEL-L<br>TIN                                                              | Rekord<br>2B-STEEL-L                                                                     |
|---------------------------------------------------------------------------------------------|---------|----------------|----------------|------------------|-----|-------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Ø d <sub>1</sub><br>mm                                                                      | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □   |  |      |                                                                                         |                                                                                           |                                                                                          |                                                                                          |
| M                                                                                           | 3       | 0,5            | 56             | 11               | 2,2 | —                                                                                   | 2,5  |                                                                                         |                                                                                           |                                                                                          |                                                                                          |
|                                                                                             | 4       | 0,7            | 63             | 13               | 2,8 | 2,1                                                                                 | 3,3  | C0101001.0040                                                                           |                                                                                           |                                                                                          |                                                                                          |
|                                                                                             | 5       | 0,8            | 70             | 15               | 3,5 | 2,7                                                                                 | 4,2  | C0101001.0050                                                                           | C0208900.0050                                                                             | C0208400.0050                                                                            |                                                                                          |
|                                                                                             | 6       | 1              | 80             | 17               | 4,5 | 3,4                                                                                 | 5    | C0101001.0060                                                                           | C0208900.0060                                                                             | C0208400.0060                                                                            |                                                                                          |
|                                                                                             | 7       | 1              | 80             | 17               | 5,5 | 4,3                                                                                 | 6    |                                                                                         |                                                                                           |                                                                                          |                                                                                          |
|                                                                                             | 8       | 1,25           | 90             | 20               | 6   | 4,9                                                                                 | 6,8  | C0101001.0080                                                                           | C0208900.0080                                                                             | C0208400.0080                                                                            |                                                                                          |
|                                                                                             | 9       | 1,25           | 90             | 20               | 7   | 5,5                                                                                 | 7,8  |                                                                                         |                                                                                           |                                                                                          |                                                                                          |
|                                                                                             | 10      | 1,5            | 100            | 22               | 7   | 5,5                                                                                 | 8,5  | C0101001.0100                                                                           | C0208900.0100                                                                             | C0208400.0100                                                                            |                                                                                          |
|                                                                                             | 11      | 1,5            | 100            | 22               | 8   | 6,2                                                                                 | 9,5  | C0101001.0111                                                                           | C0208900.0111                                                                             | C0208400.0111                                                                            |                                                                                          |
|                                                                                             | 12      | 1,75           | 110            | 24               | 9   | 7                                                                                   | 10,2 | C0101001.0112                                                                           | C0208900.0112                                                                             | C0208400.0112                                                                            | C0208910.0112                                                                            |
|                                                                                             | 14      | 2              | 110            | 26               | 11  | 9                                                                                   | 12   | C0101001.0114                                                                           | C0208900.0114                                                                             | C0208400.0114                                                                            | C0208910.0114                                                                            |
|                                                                                             | 16      | 2              | 110            | 27               | 12  | 9                                                                                   | 14   | C0101001.0116                                                                           | C0208900.0116                                                                             | C0208400.0116                                                                            | C0208910.0116                                                                            |
|                                                                                             | 18      | 2,5            | 125            | 30               | 14  | 11                                                                                  | 15,5 | C0101001.0118                                                                           | C0208900.0118                                                                             | C0208400.0118                                                                            | C0208910.0118                                                                            |
|                                                                                             | 20      | 2,5            | 140            | 32               | 16  | 12                                                                                  | 17,5 | C0101001.0120                                                                           | C0208900.0120                                                                             | C0208400.0120                                                                            | C0208910.0120                                                                            |
|                                                                                             | 22      | 2,5            | 140            | 32               | 18  | 14,5                                                                                | 19,5 | C0101001.0122                                                                           | C0208900.0122                                                                             | C0208400.0122                                                                            | C0208910.0122                                                                            |
|                                                                                             | 24      | 3              | 160            | 34               | 18  | 14,5                                                                                | 21   | C0101001.0124                                                                           | C0208900.0124                                                                             | C0208400.0124                                                                            | C0208910.0124                                                                            |
|                                                                                             | 27      | 3              | 160            | 36               | 20  | 16                                                                                  | 24   | C0101001.0127                                                                           | C0208900.0127                                                                             | C0208400.0127                                                                            |                                                                                          |
|                                                                                             | 30      | 3,5            | 180            | 40               | 22  | 18                                                                                  | 26,5 | C0101001.0130                                                                           | C0208900.0130                                                                             | C0208400.0130                                                                            |                                                                                          |
|                                                                                             | 33      | 3,5            | 180            | 40               | 25  | 20                                                                                  | 29,5 | C0101001.0133                                                                           | C0208900.0133                                                                             | C0208400.0133                                                                            |                                                                                          |
|                                                                                             | 36      | 4              | 200            | 50               | 28  | 22                                                                                  | 32   | C0101001.0136                                                                           | C0208900.0136                                                                             | C0208400.0136                                                                            |                                                                                          |
|                                                                                             | 39      | 4              | 200            | 50               | 32  | 24                                                                                  | 35   | C0101001.0139                                                                           | C0208900.0139                                                                             | C0208400.0139                                                                            |                                                                                          |
|                                                                                             | 42      | 4,5            | 200            | 56               | 32  | 24                                                                                  | 37,5 | C0101001.0142                                                                           | C0208900.0142                                                                             | C0208400.0142                                                                            |                                                                                          |
|                                                                                             | 45      | 4,5            | 220            | 58               | 36  | 29                                                                                  | 40,5 | C0101001.0145                                                                           | C0208900.0145                                                                             | C0208400.0145                                                                            |                                                                                          |
|                                                                                             | 48      | 5              | 250            | 65               | 36  | 29                                                                                  | 43   | C0101001.0148                                                                           | C0208900.0148                                                                             | C0208400.0148                                                                            |                                                                                          |
|                                                                                             | 52      | 5              | 250            | 65               | 40  | 32                                                                                  | 47   | C0101001.0152                                                                           | C0208900.0152                                                                             | C0208400.0152                                                                            |                                                                                          |
| DIN 371  |         |                |                |                  |     |                                                                                     |      |  92  |  92  |  92 |  93 |
| DIN 352  |         |                |                |                  |     |                                                                                     |      |  150 |  150 |                                                                                          |                                                                                          |

STEEL  
Steel  
materials

ISO 1/4H

TIN

HSSE

B / 4-5

E / O

ISO 3/6G

HSSE

B / 4-5

E / O

ISO 3/6G

TIN

HSSE

B / 4-5

E / O

7G

HSSE

B / 4-5

E / O

7G

TIN

HSSE

B / 4-5

E / O

ISO 2/6H

HSSE

B / 4-5

E / O

ISO 2/6H

TIN

HSSE

B / 4-5

E / O

max. 3 x d<sub>1</sub>

P 1.1-4.1

P 1.1-3.1

N 2.2

P 1.1-4.1

P 1.1-3.1

N 2.2

P 1.1-4.1

P 1.1-3.1

N 2.2

P 1.1-4.1

Rekord  
2B-STEEL-L  
TINRekord  
2B-STEEL-LRekord  
2B-STEEL-L  
TINRekord  
2B-STEEL-LRekord  
2B-STEEL-L  
TINRekord  
2B-STEEL-L-LHRekord  
2B-STEEL-L-LH  
TINC0208410.0112  
C0208410.0114  
C0208410.0116  
C0208410.0118  
C0208410.0120  
C0208410.0122  
C0208410.0124C0208920.0112  
C0208920.0114  
C0208920.0116  
C0208920.0118  
C0208920.0120  
C0208920.0122  
C0208920.0124C0208420.0112  
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C0208950.0116  
C0208950.0118  
C0208950.0120  
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C0208950.0124C0208450.0112  
C0208450.0114  
C0208450.0116  
C0208450.0118  
C0208450.0120  
C0208450.0122  
C0208450.0124

M 3

4

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36

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42

45

48

52



93



93



93



93



93



93



93

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

Accessories

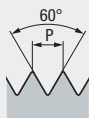




|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# M

DIN 13



DIN  
376

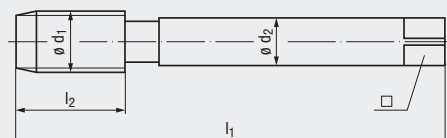
STEEL  
Steel  
materials



new



new



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

max. 3 x d<sub>1</sub>



max. 2 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

» 78

P 3.1-5.1

P 3.1-5.1

P 2.1-3.1

P 2.1-3.1

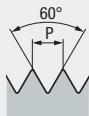
|          | Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |      | Rekord<br>2B-STEEL-H<br>PM-ALCR-102 | Rekord<br>2B-STEEL-H<br>PM-ALCR-101 | Rekord<br>2D-STEEL | Rekord<br>2D-STEEL/E |
|----------|------------------------|---------|----------------|----------------|------------------|------|------|-------------------------------------|-------------------------------------|--------------------|----------------------|
| <b>M</b> | 3                      | 0,5     | 56             | 11             | 2,2              | —    | 2,5  |                                     |                                     |                    |                      |
|          | 4                      | 0,7     | 63             | 13             | 2,8              | 2,1  | 3,3  |                                     |                                     |                    |                      |
|          | 5                      | 0,8     | 70             | 15             | 3,5              | 2,7  | 4,2  |                                     |                                     |                    |                      |
|          | 6                      | 1       | 80             | 17             | 4,5              | 3,4  | 5    |                                     |                                     | C0451000.0060      |                      |
|          | 7                      | 1       | 80             | 17             | 5,5              | 4,3  | 6    |                                     |                                     |                    |                      |
|          | 8                      | 1,25    | 90             | 20             | 6                | 4,9  | 6,8  |                                     |                                     | C0451000.0080      |                      |
|          | 9                      | 1,25    | 90             | 20             | 7                | 5,5  | 7,8  |                                     |                                     |                    |                      |
|          | 10                     | 1,5     | 100            | 22             | 7                | 5,5  | 8,5  |                                     |                                     | C0451000.0100      |                      |
|          | 11                     | 1,5     | 100            | 22             | 8                | 6,2  | 9,5  |                                     |                                     |                    |                      |
|          | 12                     | 1,75    | 110            | 24             | 9                | 7    | 10,2 | C0209J01.0112                       | C0208J01.0112                       | C0451000.0112      | C0461000.0112        |
|          | 14                     | 2       | 110            | 26             | 11               | 9    | 12   |                                     |                                     |                    |                      |
|          | 16                     | 2       | 110            | 27             | 12               | 9    | 14   | C0209J01.0116                       | C0208J01.0116                       | C0451000.0116      | C0461000.0116        |
|          | 18                     | 2,5     | 125            | 30             | 14               | 11   | 15,5 |                                     |                                     |                    |                      |
|          | 20                     | 2,5     | 140            | 32             | 16               | 12   | 17,5 | C0209J01.0120                       | C0208J01.0120                       | C0451000.0120      | C0461000.0120        |
|          | 22                     | 2,5     | 140            | 32             | 18               | 14,5 | 19,5 |                                     |                                     |                    |                      |
|          | 24                     | 3       | 160            | 34             | 18               | 14,5 | 21   | C0209J01.0124                       | C0208J01.0124                       | C0451000.0124      | C0461000.0124        |
|          | 27                     | 3       | 160            | 36             | 20               | 16   | 24   |                                     |                                     | C0451000.0127      |                      |
|          | 30                     | 3,5     | 180            | 40             | 22               | 18   | 26,5 |                                     |                                     | C0451000.0130      |                      |
|          | 33                     | 3,5     | 180            | 40             | 25               | 20   | 29,5 |                                     |                                     |                    |                      |
|          | 36                     | 4       | 200            | 50             | 28               | 22   | 32   |                                     |                                     |                    |                      |
|          | 39                     | 4       | 200            | 50             | 32               | 24   | 35   |                                     |                                     |                    |                      |
|          | 42                     | 4,5     | 200            | 56             | 32               | 24   | 37,5 |                                     |                                     |                    |                      |
|          | 45                     | 4,5     | 220            | 58             | 36               | 29   | 40,5 |                                     |                                     |                    |                      |
|          | 48                     | 5       | 250            | 65             | 36               | 29   | 43   |                                     |                                     |                    |                      |
|          | 52                     | 5       | 250            | 65             | 40               | 32   | 47   |                                     |                                     |                    |                      |
|          | DIN 371                |         |                |                |                  |      |      | » 94                                | » 94                                | » 94               | » 94                 |
|          | DIN 352                |         |                |                |                  |      |      |                                     |                                     | » 150              |                      |



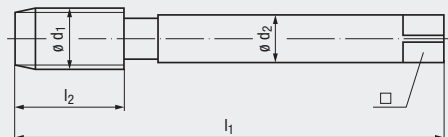
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# M

DIN 13



DIN  
376



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

max. 3 x d<sub>1</sub>



|           |                                 |                         |           |
|-----------|---------------------------------|-------------------------|-----------|
| P 1.1-4.1 | P 1.1-4.1<br>M 1.1-4.1<br>N 2.2 | P 2.1-3.1<br>N 2.2, 2.5 | P 1.1-4.1 |
|-----------|---------------------------------|-------------------------|-----------|

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |      | Rekord<br>2B-VA<br>TIN | Rekord<br>2B-VA<br>GLT-1 | Rekord<br>2B-VA<br>NT | Rekord<br>2B-VA<br>TIN |
|------------------------|---------|----------------|----------------|------------------|------|------|------------------------|--------------------------|-----------------------|------------------------|
| M 3                    | 0,5     | 56             | 11             | 2,2              | —    | 2,5  |                        |                          |                       |                        |
| 4                      | 0,7     | 63             | 13             | 2,8              | 2,1  | 3,3  |                        |                          |                       |                        |
| 5                      | 0,8     | 70             | 15             | 3,5              | 2,7  | 4,2  |                        |                          |                       |                        |
| 6                      | 1       | 80             | 17             | 4,5              | 3,4  | 5    |                        |                          |                       |                        |
| 7                      | 1       | 80             | 17             | 5,5              | 4,3  | 6    |                        |                          |                       |                        |
| 8                      | 1,25    | 90             | 20             | 6                | 4,9  | 6,8  |                        |                          |                       |                        |
| 9                      | 1,25    | 90             | 20             | 7                | 5,5  | 7,8  |                        |                          |                       |                        |
| 10                     | 1,5     | 100            | 22             | 7                | 5,5  | 8,5  |                        |                          |                       |                        |
| 11                     | 1,5     | 100            | 22             | 8                | 6,2  | 9,5  |                        |                          |                       |                        |
| 12                     | 1,75    | 110            | 24             | 9                | 7    | 10,2 |                        |                          |                       |                        |
| 14                     | 2       | 110            | 26             | 11               | 9    | 12   | C0203110.0112          | C020C310.0112            | C0203020.0112         | C0203120.0112          |
| 16                     | 2       | 110            | 27             | 12               | 9    | 14   | C0203110.0114          | C020C310.0114            | C0203020.0114         | C0203120.0114          |
| 18                     | 2,5     | 125            | 30             | 14               | 11   | 15,5 | C0203110.0116          | C020C310.0116            | C0203020.0116         | C0203120.0116          |
| 20                     | 2,5     | 140            | 32             | 16               | 12   | 17,5 | C0203110.0118          | C020C310.0118            | C0203020.0118         | C0203120.0118          |
| 22                     | 2,5     | 140            | 32             | 18               | 14,5 | 19,5 | C0203110.0120          | C020C310.0120            | C0203020.0120         | C0203120.0120          |
| 24                     | 3       | 160            | 34             | 18               | 14,5 | 21   | C0203110.0122          | C020C310.0122            | C0203020.0122         | C0203120.0122          |
| 27                     | 3       | 160            | 36             | 20               | 16   | 24   | C0203110.0124          | C020C310.0124            | C0203020.0124         | C0203120.0124          |
| 30                     | 3,5     | 180            | 40             | 22               | 18   | 26,5 |                        |                          |                       |                        |
| 33                     | 3,5     | 180            | 40             | 25               | 20   | 29,5 |                        |                          |                       |                        |
| 36                     | 4       | 200            | 50             | 28               | 22   | 32   |                        |                          |                       |                        |
| 39                     | 4       | 200            | 50             | 32               | 24   | 35   |                        |                          |                       |                        |
| 42                     | 4,5     | 200            | 56             | 32               | 24   | 37,5 |                        |                          |                       |                        |
| 45                     | 4,5     | 220            | 58             | 36               | 29   | 40,5 |                        |                          |                       |                        |
| 48                     | 5       | 250            | 65             | 36               | 29   | 43   |                        |                          |                       |                        |
| 52                     | 5       | 250            | 65             | 40               | 32   | 47   |                        |                          |                       |                        |

DIN 371



» 96

» 96

» 96

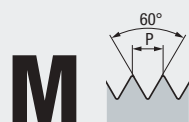
» 96

DIN 352

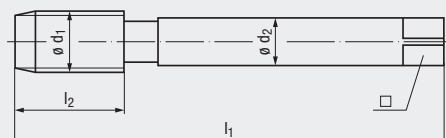


## VA

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



DIN 13



DIN  
376

**INOX**  
Stainless steel  
materials



new



l<sub>2</sub> ≈ 10 x P

**GG**  
Cast iron



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



ISO 2/6H  
GLT-201  
HSSE  
R45  
C / 2-3  
E / O

6HX  
NT  
HSSE  
C / 2-3  
E

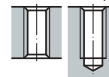
6HX  
TICN  
HSSE  
C / 2-3  
E

Gewindetiefe und Lochform  
Thread depth and hole type

max. 2,5 x d<sub>1</sub>



max. 2 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

» 78

M 1.1-2.1

K 1.1-1.2

K 1.1-1.2

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □   |      | Enorm 2<br>INOX<br>GLT-201 | Rekord<br>2A-GG<br>NT | Rekord<br>2A-GG<br>TICN |
|------------------------|---------|----------------|----------------|------------------|-----|------|----------------------------|-----------------------|-------------------------|
| <b>M</b>               | 3       | 0,5            | 56             | 11               | 2,2 | —    | 2,5                        |                       |                         |
|                        | 4       | 0,7            | 63             | 13               | 2,8 | 2,1  | 3,3                        |                       |                         |
|                        | 5       | 0,8            | 70             | 15               | 3,5 | 2,7  | 4,2                        |                       |                         |
|                        | 6       | 1              | 80             | 17               | 4,5 | 3,4  | 5                          | C0102001.0060         | C0109201.0060           |
|                        | 7       | 1              | 80             | 17               | 5,5 | 4,3  | 6                          |                       |                         |
|                        | 8       | 1,25           | 90             | 20               | 6   | 4,9  | 6,8                        | C0102001.0080         | C0109201.0080           |
|                        | 9       | 1,25           | 90             | 20               | 7   | 5,5  | 7,8                        |                       |                         |
|                        | 10      | 1,5            | 100            | 22               | 7   | 5,5  | 8,5                        | C0102001.0100         | C0109201.0100           |
|                        | 11      | 1,5            | 100            | 22               | 8   | 6,2  | 9,5                        |                       |                         |
|                        | 12      | 1,75           | 110            | 24               | 9   | 7    | 10,2                       | C0102001.0112         | C0109201.0112           |
|                        | 14      | 2              | 110            | 26               | 11  | 9    | 12                         | C0102001.0114         | C0109201.0114           |
|                        | 16      | 2              | 110            | 27               | 12  | 9    | 14                         | C0102001.0116         | C0109201.0116           |
|                        | 18      | 2,5            | 125            | 30               | 14  | 11   | 15,5                       | C0102001.0118         | C0109201.0118           |
|                        | 20      | 2,5            | 140            | 32               | 16  | 12   | 17,5                       | C0102001.0120         | C0109201.0120           |
|                        | 22      | 2,5            | 140            | 32               | 18  | 14,5 | 19,5                       | C0102001.0122         | C0109201.0122           |
|                        | 24      | 3              | 160            | 34               | 18  | 14,5 | 21                         | C0102001.0124         | C0109201.0124           |
|                        | 27      | 3              | 160            | 36               | 20  | 16   | 24                         | C0102001.0127         |                         |
|                        | 30      | 3,5            | 180            | 40               | 22  | 18   | 26,5                       | C0102001.0130         |                         |
|                        | 33      | 3,5            | 180            | 40               | 25  | 20   | 29,5                       |                       |                         |
|                        | 36      | 4              | 200            | 50               | 28  | 22   | 32                         |                       |                         |
|                        | 39      | 4              | 200            | 50               | 32  | 24   | 35                         |                       |                         |
|                        | 42      | 4,5            | 200            | 56               | 32  | 24   | 37,5                       |                       |                         |
|                        | 45      | 4,5            | 220            | 58               | 36  | 29   | 40,5                       |                       |                         |
|                        | 48      | 5              | 250            | 65               | 36  | 29   | 43                         |                       |                         |
|                        | 52      | 5              | 250            | 65               | 40  | 32   | 47                         |                       |                         |

DIN 371



» 98

DIN 352



» 98

» 98

|                |                        |   |
|----------------|------------------------|---|
| Product Finder | V <sub>C</sub>         | M |
|                | MF                     |   |
|                | UNC<br>UN-8            |   |
|                | UNF<br>UNEF            |   |
|                | G, Rp<br>NPSM, NPSF    |   |
|                | NPT, NPTF<br>Rc, W     |   |
|                | BSW, BSF               |   |
|                | Pg                     |   |
|                | MJ<br>UNJC, UNJF       |   |
|                | EG (STI)               |   |
|                | SELF-LOCK              |   |
|                | Tr, Tr-F<br>Rd         |   |
|                | Zubehör<br>Accessories |   |

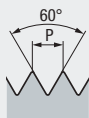


**EMUGE**  
**FRANKEN**

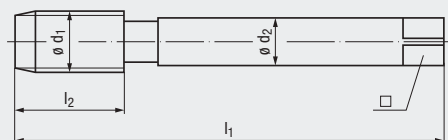
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# M

DIN 13



DIN  
376



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

|          | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |      |
|----------|------------------------|---------|----------------|----------------|------------------|------|------|
| <b>M</b> | 3                      | 0,5     | 56             | 11             | 2,2              | —    | 2,5  |
|          | 4                      | 0,7     | 63             | 13             | 2,8              | 2,1  | 3,3  |
|          | 5                      | 0,8     | 70             | 15             | 3,5              | 2,7  | 4,2  |
|          | 6                      | 1       | 80             | 17             | 4,5              | 3,4  | 5    |
|          | 7                      | 1       | 80             | 17             | 5,5              | 4,3  | 6    |
|          | 8                      | 1,25    | 90             | 20             | 6                | 4,9  | 6,8  |
|          | 9                      | 1,25    | 90             | 20             | 7                | 5,5  | 7,8  |
|          | 10                     | 1,5     | 100            | 22             | 7                | 5,5  | 8,5  |
|          | 11                     | 1,5     | 100            | 22             | 8                | 6,2  | 9,5  |
|          | 12                     | 1,75    | 110            | 24             | 9                | 7    | 10,2 |
|          | 14                     | 2       | 110            | 26             | 11               | 9    | 12   |
|          | 16                     | 2       | 110            | 27             | 12               | 9    | 14   |
|          | 18                     | 2,5     | 125            | 30             | 14               | 11   | 15,5 |
|          | 20                     | 2,5     | 140            | 32             | 16               | 12   | 17,5 |
|          | 22                     | 2,5     | 140            | 32             | 18               | 14,5 | 19,5 |
|          | 24                     | 3       | 160            | 34             | 18               | 14,5 | 21   |
|          | 27                     | 3       | 160            | 36             | 20               | 16   | 24   |
|          | 30                     | 3,5     | 180            | 40             | 22               | 18   | 26,5 |
|          | 33                     | 3,5     | 180            | 40             | 25               | 20   | 29,5 |
|          | 36                     | 4       | 200            | 50             | 28               | 22   | 32   |
|          | 39                     | 4       | 200            | 50             | 32               | 24   | 35   |
|          | 42                     | 4,5     | 200            | 56             | 32               | 24   | 37,5 |
|          | 45                     | 4,5     | 220            | 58             | 36               | 29   | 40,5 |
|          | 48                     | 5       | 250            | 65             | 36               | 29   | 43   |
|          | 52                     | 5       | 250            | 65             | 40               | 32   | 47   |

DIN 371



100

DIN 352



AL  
Aluminium  
wrought alloys



new



new



ISO 2/6H

HSSE

B / ≈3

E / O

max. 3 x d<sub>1</sub>



N 1.4

N 1.1-1.4, 2.1

Rekord  
2B-AL

Rekord  
2B-AL  
GLT-104

Enorm  
2-AL

Enorm  
2-AL  
GLT-104

C0204500.0112  
C0204500.0114

C0203G00.0112  
C0203G00.0114

C0504500.0112  
C0504500.0114

C0503G00.0112  
C0503G00.0114

C0204500.0116  
C0204500.0120

C0203G00.0116  
C0203G00.0120

C0504500.0116  
C0504500.0120

C0503G00.0116  
C0503G00.0120



| TI<br>Titanium                                                                                                |                                                                                         |                                                                                                               |                                                                                         | NI<br>Nickel alloys                                                                                           |                                                                                                                 |                                                                                           |    |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----|
|                              |        |                              |        |                              |                              |                                                                                           |    |
|                              |        |                              |        |                              |                              |                                                                                           |    |
| 6HX                                                                                                           | 6HX                                                                                     | 6HX                                                                                                           | 6HX                                                                                     | 6HX                                                                                                           | 6HX                                                                                                             |                                                                                           |    |
| NT2                                                                                                           | TICN                                                                                    | NT2                                                                                                           | TICN                                                                                    | TICN                                                                                                          | TICN                                                                                                            |                                                                                           |    |
| HSSE                                                                                                          | HSSE                                                                                    | HSSE                                                                                                          | HSSE                                                                                    | HSSE-PM                                                                                                       | HSSE-PM                                                                                                         |                                                                                           |    |
| L15                                                                                                           | L15                                                                                     | R15                                                                                                           | R15                                                                                     | L08                                                                                                           | R10                                                                                                             |                                                                                           |    |
| D / 4-5                                                                                                       | D / 4-5                                                                                 | C / 2-3                                                                                                       | C / 2-3                                                                                 | D / 4-5                                                                                                       | C / 2-3                                                                                                         |                                                                                           |    |
| E / O / P                                                                                                     | E / O / P                                                                               | E / O / P                                                                                                     | E / O / P                                                                               | O / P                                                                                                         | O / P                                                                                                           |                                                                                           |    |
| max. 3 x d <sub>1</sub><br> |                                                                                         | max. 2 x d <sub>1</sub><br> |                                                                                         | max. 3 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> |                                                                                           |    |
| P 4.1-5.1                                                                                                     | P 4.1-5.1                                                                               | P 4.1-5.1                                                                                                     | P 4.1-5.1                                                                               | N 2.8                                                                                                         | N 2.8                                                                                                           |                                                                                           |    |
| M 3.1-4.1                                                                                                     | M 3.1-4.1                                                                               | M 3.1-4.1                                                                                                     | M 3.1-4.1                                                                               | S 2.3, 2.5-2.6                                                                                                | S 2.3, 2.5-2.6                                                                                                  |                                                                                           |    |
| N 2.4-2.5, 2.7                                                                                                | N 2.4-2.5, 2.7                                                                          | N 2.4-2.5, 2.7                                                                                                | N 2.4-2.5, 2.7                                                                          |                                                                                                               |                                                                                                                 |                                                                                           |    |
| S 1.1-2.2, 2.4                                                                                                | S 1.1-2.2, 2.4                                                                          | S 1.1-2.2, 2.4                                                                                                | S 1.1-2.2, 2.4                                                                          |                                                                                                               |                                                                                                                 |                                                                                           |    |
| Rekord 2C-TI NT2                                                                                              | Rekord 2C-TI TICN                                                                       | Rekord 2D-TI NT2                                                                                              | Rekord 2D-TI TICN                                                                       | Rekord 2C-NI PM-TICN                                                                                          | Rekord 2DF-NI PM-TICN                                                                                           |                                                                                           |    |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 | M                                                                                         | 3  |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 4  |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 5  |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 6  |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 7  |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 8  |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 9  |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 10 |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 11 |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 12 |
| C0306001.0112                                                                                                 | C0309601.0112                                                                           | C0456001.0112                                                                                                 | C0459601.0112                                                                           | C030J401.0112                                                                                                 | C438J401.0112                                                                                                   |                                                                                           | 14 |
|                                                                                                               |                                                                                         | C0456001.0114                                                                                                 | C0459601.0114                                                                           | C030J401.0114                                                                                                 | C438J401.0114                                                                                                   |                                                                                           | 16 |
| C0306001.0116                                                                                                 | C0309601.0116                                                                           | C0456001.0116                                                                                                 | C0459601.0116                                                                           | C030J401.0116                                                                                                 | C438J401.0116                                                                                                   |                                                                                           | 18 |
|                                                                                                               |                                                                                         | C0456001.0118                                                                                                 | C0459601.0118                                                                           |                                                                                                               |                                                                                                                 |                                                                                           | 20 |
| C0306001.0120                                                                                                 | C0309601.0120                                                                           | C0456001.0120                                                                                                 | C0459601.0120                                                                           | C030J401.0120                                                                                                 | C438J401.0120                                                                                                   |                                                                                           | 22 |
|                                                                                                               |                                                                                         | C0456001.0122                                                                                                 | C0459601.0122                                                                           |                                                                                                               |                                                                                                                 |                                                                                           | 24 |
| C0306001.0124                                                                                                 | C0309601.0124                                                                           | C0456001.0124                                                                                                 | C0459601.0124                                                                           |                                                                                                               |                                                                                                                 |                                                                                           | 27 |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 30 |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 33 |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 36 |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 39 |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 42 |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 45 |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 48 |
|                                                                                                               |                                                                                         |                                                                                                               |                                                                                         |                                                                                                               |                                                                                                                 |                                                                                           | 52 |
|  103                       |  103 |  103                       |  103 |                                                                                                               |  104                         |  104 |    |

Product Finder

V<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

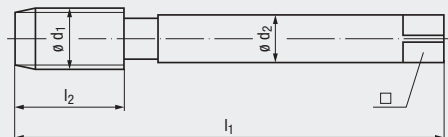
Zubehör

Accessories





DIN 13



DIN  
376

H  
Materials of high  
tensile strength



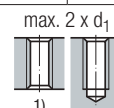
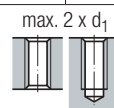
|           |           |         |         |
|-----------|-----------|---------|---------|
| 6HX       | 6HX       | 6HX     | 6HX     |
| NT        | TICN      | NT      | TICN    |
| HSSE      | HSSE      | HSSE    | HSSE    |
| C / 2-3   | C / 2-3   | C / 2-3 | C / 2-3 |
| E / O / P | E / O / P | E / O   | E / O   |

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

Technische Informationen  
Technical information



Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

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|           |                |           |                |
|-----------|----------------|-----------|----------------|
| K 1.1-4.2 | K 1.1-4.2      | K 1.1-4.2 | K 1.1-4.2      |
| N 4.1     | N 1.5-1.6, 2.6 | N 4.1     | N 1.5-1.6, 2.6 |
|           | N 4.1, 5.1     |           | N 4.1, 5.1     |

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |         | Rekord<br>2A-H<br>NT | Rekord<br>2A-H<br>TICN | Rekord<br>2A-H-1KZ<br>NT | Rekord<br>2A-H-1KZ<br>TICN |
|------------------------|---------|----------------|----------------|------------------|------|---------|----------------------|------------------------|--------------------------|----------------------------|
| M 3                    | 0,5     | 56             | 11             | 2,2              | —    | 2,5     |                      |                        |                          |                            |
| 4                      | 0,7     | 63             | 13             | 2,8              | 2,1  | 3,3     |                      |                        |                          |                            |
| 5                      | 0,8     | 70             | 15             | 3,5              | 2,7  | 4,2     |                      |                        |                          |                            |
| 6                      | 1       | 80             | 17             | 4,5              | 3,4  | 5       |                      |                        |                          |                            |
| 7                      | 1       | 80             | 17             | 5,5              | 4,3  | 6       |                      |                        |                          |                            |
| 8                      | 1,25    | 90             | 20             | 6                | 4,9  | 6,8     |                      |                        |                          |                            |
| 9                      | 1,25    | 90             | 20             | 7                | 5,5  | 7,8     |                      |                        |                          |                            |
| 10                     | 1,5     | 100            | 22             | 7                | 5,5  | 8,5     |                      |                        |                          |                            |
| 11                     | 1,5     | 100            | 22             | 8                | 6,2  | 9,5     |                      |                        |                          |                            |
| 12                     | 1,75    | 110            | 24             | 9                | 7    | 10,2 2) | C0100501.0112        | C0109101.0112          | C1950501.0112            | C1959101.0112              |
| 14                     | 2       | 110            | 26             | 11               | 9    | 12 2)   | C0100501.0114        | C0109101.0114          | C1950501.0114            | C1959101.0114              |
| 16                     | 2       | 110            | 27             | 12               | 9    | 14 2)   | C0100501.0116        | C0109101.0116          | C1950501.0116            | C1959101.0116              |
| 18                     | 2,5     | 125            | 30             | 14               | 11   | 15,5    | C0100501.0118        | C0109101.0118          | C1950501.0118            | C1959101.0118              |
| 20                     | 2,5     | 140            | 32             | 16               | 12   | 17,5 2) | C0100501.0120        | C0109101.0120          | C1950501.0120            | C1959101.0120              |
| 22                     | 2,5     | 140            | 32             | 18               | 14,5 | 19,5    | C0100501.0122        | C0109101.0122          | C1950501.0122            | C1959101.0122              |
| 24                     | 3       | 160            | 34             | 18               | 14,5 | 21      | C0100501.0124        | C0109101.0124          | C1950501.0124            | C1959101.0124              |
| 27                     | 3       | 160            | 36             | 20               | 16   | 24      | C0100501.0127        | C0109101.0127          |                          |                            |
| 30                     | 3,5     | 180            | 40             | 22               | 18   | 26,5    | C0100501.0130        | C0109101.0130          |                          |                            |
| 33                     | 3,5     | 180            | 40             | 25               | 20   | 29,5    | C0100501.0133        |                        |                          |                            |
| 36                     | 4       | 200            | 50             | 28               | 22   | 32      | C0100501.0136        |                        |                          |                            |
| 39                     | 4       | 200            | 50             | 32               | 24   | 35      |                      |                        |                          |                            |
| 42                     | 4,5     | 200            | 56             | 32               | 24   | 37,5    |                      |                        |                          |                            |
| 45                     | 4,5     | 220            | 58             | 36               | 29   | 40,5    |                      |                        |                          |                            |
| 48                     | 5       | 250            | 65             | 36               | 29   | 43      |                      |                        |                          |                            |
| 52                     | 5       | 250            | 65             | 40               | 32   | 47      |                      |                        |                          |                            |

DIN 371



104

105

105

105

DIN 352



2) Vorbohrdurchmesser für Gewindebohrer Rekord 2A-HCUT-PM-TICN um 0,2 mm anheben  
Increase drill diameter for taps Rekord 2A-HCUT-PM-TICN by 0.2 mm

| <b>H</b><br>Materials of high<br>tensile strength                                                             |                                                                                                               | <b>HCUT</b><br>Hardened<br>steels                                                                               |  |  |  |  |  |            |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--|--|--|--|--|------------|
|                              |                              |                                |  |  |  |  |  |            |
|                              |                              |                                |  |  |  |  |  |            |
| 6HX<br>TICN<br>HSSE                                                                                           | 6HX<br><b>KHM</b>                                                                                             | 6HX<br>TICN<br><b>HSSE-PM</b>                                                                                   |  |  |  |  |  |            |
| C / 2-3<br>E / O                                                                                              | C / 2-3<br>E / O                                                                                              | C / 2-3<br>O / P                                                                                                |  |  |  |  |  |            |
| max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 1,5 x d <sub>1</sub><br> |  |  |  |  |  |            |
| <b>K</b> 1.1-4.2<br><b>N</b> 1.5-1.6, 2.6<br><b>N</b> 4.1, 5.1                                                | <b>K</b> 1.1-4.2<br><b>N</b> 1.5-1.6<br><b>N</b> 2.6-2.8<br><b>N</b> 4.1, 4.3-4.4<br><b>N</b> 5.1-5.2         | <b>H</b> 1.1-1.2                                                                                                |  |  |  |  |  |            |
| <b>Rekord</b><br>2A-H-IKZN<br>TICN                                                                            | <b>KHM-Rekord</b><br>2A-H-IKZ                                                                                 | <b>Rekord</b><br>2A-HCUT<br>PM-TICN                                                                             |  |  |  |  |  |            |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | <b>M</b> 3 |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 4          |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 5          |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 6          |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 7          |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 8          |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 9          |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 10         |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 11         |
| C1069101.0112                                                                                                 | <b>C1950901.0112</b>                                                                                          | <b>C010J901.0112</b>                                                                                            |  |  |  |  |  | 12         |
| C1069101.0114                                                                                                 | <b>C1950901.0114</b>                                                                                          | <b>C010J901.0114</b>                                                                                            |  |  |  |  |  | 14         |
| C1069101.0116                                                                                                 | <b>C1950901.0116</b>                                                                                          | <b>C010J901.0116</b>                                                                                            |  |  |  |  |  | 16         |
| C1069101.0118                                                                                                 | <b>C1950901.0118</b>                                                                                          |                                                                                                                 |  |  |  |  |  | 18         |
| C1069101.0120                                                                                                 | <b>C1950901.0120</b>                                                                                          | <b>C010J901.0120</b>                                                                                            |  |  |  |  |  | 20         |
| C1069101.0122                                                                                                 | <b>C1950901.0122</b>                                                                                          |                                                                                                                 |  |  |  |  |  | 22         |
| C1069101.0124                                                                                                 | <b>C1950901.0124</b>                                                                                          |                                                                                                                 |  |  |  |  |  | 24         |
|                                                                                                               | <b>C1950901.0127</b>                                                                                          |                                                                                                                 |  |  |  |  |  | 27         |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 30         |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 33         |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 36         |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 39         |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 42         |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 45         |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 48         |
|                                                                                                               |                                                                                                               |                                                                                                                 |  |  |  |  |  | 52         |
|  105                       |  105                       |  105                         |  |  |  |  |  |            |

1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
Rd

Zubehör  
Accessories


|                                                                                                                                                                                                                                                                                                          |                                                     |           |                                                                                   |                                                 |                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-----------|-----------------------------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------|
| Product Finder                                                                                                                                                                                                                                                                                           | <div><div>M</div><div>DIN 13</div><div></div></div> | ≈ DIN 376 | HCUT<br>Hardened steels                                                           |                                                 | <div><div>new</div><div></div></div> <div><div>new</div><div></div></div> |
| V <sub>c</sub>                                                                                                                                                                                                                                                                                           |                                                     |           |                                                                                   |                                                 |                                                                           |
| M                                                                                                                                                                                                                                                                                                        |                                                     |           |                                                                                   |                                                 |                                                                           |
| MF                                                                                                                                                                                                                                                                                                       |                                                     |           |                                                                                   |                                                 |                                                                           |
| UNC<br>UN-8                                                                                                                                                                                                                                                                                              |                                                     |           |                                                                                   |                                                 |                                                                           |
| UNF<br>UNEF                                                                                                                                                                                                                                                                                              |                                                     |           |                                                                                   |                                                 |                                                                           |
| G, Rp<br>NPSM, NPSF                                                                                                                                                                                                                                                                                      |                                                     |           |                                                                                   |                                                 |                                                                           |
| NPT, NPTF<br>Rc, W                                                                                                                                                                                                                                                                                       |                                                     |           |                                                                                   |                                                 |                                                                           |
| BSW, BSF                                                                                                                                                                                                                                                                                                 |                                                     |           |                                                                                   |                                                 |                                                                           |
| Pg                                                                                                                                                                                                                                                                                                       |                                                     |           |                                                                                   |                                                 |                                                                           |
| MJ<br>UNJC, UNJF                                                                                                                                                                                                                                                                                         |                                                     |           |                                                                                   |                                                 |                                                                           |
| EG (STI)                                                                                                                                                                                                                                                                                                 |                                                     |           |                                                                                   |                                                 |                                                                           |
| SELF-LOCK                                                                                                                                                                                                                                                                                                |                                                     |           |                                                                                   |                                                 |                                                                           |
| Tr, Tr-F<br>Rd                                                                                                                                                                                                                                                                                           |                                                     |           |                                                                                   |                                                 |                                                                           |
| Zubehör<br>Accessories                                                                                                                                                                                                                                                                                   |                                                     |           |                                                                                   |                                                 |                                                                           |
| Technische Informationen<br>Technical information                                                                                                                                                                                                                                                        |                                                     |           | Toleranz · Tolerance<br>Beschichtung · Coating<br>Schneidstoff · Cutting material |                                                 |                                                                           |
| Gewindetiefe und Lochform<br>Thread depth and hole type                                                                                                                                                                                                                                                  |                                                     |           | <div><div></div><div></div></div>                                                 |                                                 |                                                                           |
| Einsatzgebiete – Material<br>Applications – material                                                                                                                                                                                                                                                     |                                                     |           | H 1.3-1.4                                                                         |                                                 |                                                                           |
| » 78                                                                                                                                                                                                                                                                                                     |                                                     |           |                                                                                   |                                                 |                                                                           |
| <div><div><div><div>Ø d<sub>1</sub><br/>mm</div><div>P<br/>mm</div><div>l<sub>1</sub></div><div>l<sub>2</sub></div><div>Ø d<sub>2</sub></div><div>□</div></div><div><div>17,7</div><div>21,2</div><div>26,7</div></div></div></div>                                                                      |                                                     |           | KHM-Rekord<br>2A-HCUT/D<br>IKZ-TICN                                               | KHM-Rekord<br>2A-HCUT/C<br>IKZ-TICN             |                                                                           |
| <div><div><div>M</div><div>20</div><div>2,5</div><div>140</div><div>30</div><div>16</div><div>12</div></div><div><div>24</div><div>3</div><div>160</div><div>36</div><div>18</div><div>14,5</div></div><div><div>30</div><div>3,5</div><div>180</div><div>42</div><div>22</div><div>18</div></div></div> |                                                     |           | C130K101.0120<br>C130K101.0124<br>C130K101.0130                                   | C195K101.0120<br>C195K101.0124<br>C195K101.0130 |                                                                           |

1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

2) Achtung: KHM-Rekord 2A-HCUT/D-IKZ-TICN als Vorschneider verwenden!  
Please note: Use solid carbide tap KHM-Rekord 2A-HCUT/D-IKZ-TICN as No.1 tap!

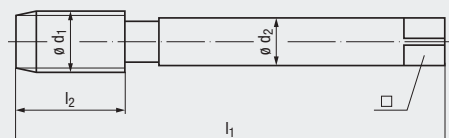


Spiralbohrer Typ EF-Drill-HCUT  
siehe Seite 62

Twist drills type EF-Drill-HCUT,  
see page 62

DIN  
376

## Z



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



|           |         |         |           |
|-----------|---------|---------|-----------|
| 6HX       | 6HX     | 6HX     | 6HX       |
| TiCN      | TiCN    | TiCN    | TiCN      |
| HSSE      | HSSE    | HSSE    | HSSE      |
|           |         |         |           |
| C / 2-3   | C / 2-3 | C / 2-3 | E / 1,5-2 |
| E / 0 / P | E / 0   | E / 0   | E / 0 / P |

78

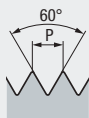
|   | Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub>                                                                    | □    |  | Rekord<br>2A-Z<br>TICN                                                                  | Rekord<br>2A-Z-İKZ<br>TICN                                                                | Rekord<br>2A-Z-İKZN<br>TICN                                                               | Rekord<br>2A-Z/E<br>TICN                                                                  |
|---|------------------------|---------|----------------|----------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| M | 3                      | 0,5     | 56             | 6              | 2,2                                                                                 | —    | 2,5                                                                                 |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 4                      | 0,7     | 63             | 7              | 2,8                                                                                 | 2,1  | 3,3                                                                                 |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 5                      | 0,8     | 70             | 8              | 3,5                                                                                 | 2,7  | 4,2                                                                                 |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 6                      | 1       | 80             | 10             | 4,5                                                                                 | 3,4  | 5                                                                                   |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 7                      | 1       | 80             | 10             | 5,5                                                                                 | 4,3  | 6                                                                                   |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 8                      | 1,25    | 90             | 14             | 6                                                                                   | 4,9  | 6,8                                                                                 |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 9                      | 1,25    | 90             | 14             | 7                                                                                   | 5,5  | 7,8                                                                                 |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 10                     | 1,5     | 100            | 16             | 7                                                                                   | 5,5  | 8,5                                                                                 |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 11                     | 1,5     | 100            | 18             | 8                                                                                   | 6,2  | 9,5                                                                                 |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 12                     | 1,75    | 110            | 18             | 9                                                                                   | 7    | 10,2                                                                                | C0109401.0112                                                                           | C1959401.0112                                                                             | C1069401.0112                                                                             | C0119401.0112                                                                             |
|   | 14                     | 2       | 110            | 20             | 11                                                                                  | 9    | 12                                                                                  | C0109401.0114                                                                           | C1959401.0114                                                                             | C1069401.0114                                                                             | C0119401.0114                                                                             |
|   | 16                     | 2       | 110            | 22             | 12                                                                                  | 9    | 14                                                                                  | C0109401.0116                                                                           | C1959401.0116                                                                             | C1069401.0116                                                                             | C0119401.0116                                                                             |
|   | 18                     | 2,5     | 125            | 25             | 14                                                                                  | 11   | 15,5                                                                                | C0109401.0118                                                                           | C1959401.0118                                                                             | C1069401.0118                                                                             | C0119401.0118                                                                             |
|   | 20                     | 2,5     | 140            | 25             | 16                                                                                  | 12   | 17,5                                                                                | C0109401.0120                                                                           | C1959401.0120                                                                             | C1069401.0120                                                                             | C0119401.0120                                                                             |
|   | 22                     | 2,5     | 140            | 27             | 18                                                                                  | 14,5 | 19,5                                                                                |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 24                     | 3       | 160            | 30             | 18                                                                                  | 14,5 | 21                                                                                  |                                                                                         | C1959401.0124                                                                             | C1069401.0124                                                                             |                                                                                           |
|   | 27                     | 3       | 160            | 30             | 20                                                                                  | 16   | 24                                                                                  |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 30                     | 3,5     | 180            | 35             | 22                                                                                  | 18   | 26,5                                                                                |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 33                     | 3,5     | 180            | 35             | 25                                                                                  | 20   | 29,5                                                                                |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 36                     | 4       | 200            | 40             | 28                                                                                  | 22   | 32                                                                                  |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 39                     | 4       | 200            | 40             | 32                                                                                  | 24   | 35                                                                                  |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 42                     | 4,5     | 200            | 45             | 32                                                                                  | 24   | 37,5                                                                                |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 45                     | 4,5     | 220            | 45             | 36                                                                                  | 29   | 40,5                                                                                |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 48                     | 5       | 250            | 50             | 36                                                                                  | 29   | 43                                                                                  |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   | 52                     | 5       | 250            | 50             | 40                                                                                  | 32   | 47                                                                                  |                                                                                         |                                                                                           |                                                                                           |                                                                                           |
|   |                        |         |                | DIN 371        |  |      |                                                                                     |  107 |  107 |  107 |  107 |
|   |                        |         |                | DIN 352        |  |      |                                                                                     |                                                                                         |                                                                                           |                                                                                           |                                                                                           |

1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

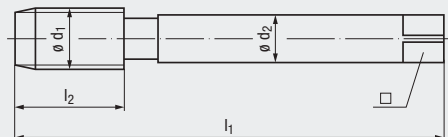
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# M

DIN 13



DIN  
376



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

|          | Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |      |
|----------|------------------------|---------|----------------|----------------|------------------|------|------|
| <b>M</b> | 3                      | 0,5     | 56             | 6              | 2,2              | —    | 2,5  |
|          | 4                      | 0,7     | 63             | 7              | 2,8              | 2,1  | 3,3  |
|          | 5                      | 0,8     | 70             | 8              | 3,5              | 2,7  | 4,2  |
|          | 6                      | 1       | 80             | 10             | 4,5              | 3,4  | 5    |
|          | 7                      | 1       | 80             | 10             | 5,5              | 4,3  | 6    |
|          | 8                      | 1,25    | 90             | 14             | 6                | 4,9  | 6,8  |
|          | 9                      | 1,25    | 90             | 14             | 7                | 5,5  | 7,8  |
|          | 10                     | 1,5     | 100            | 16             | 7                | 5,5  | 8,5  |
|          | 11                     | 1,5     | 100            | 18             | 8                | 6,2  | 9,5  |
|          | 12                     | 1,75    | 110            | 18             | 9                | 7    | 10,2 |
|          | 14                     | 2       | 110            | 20             | 11               | 9    | 12   |
|          | 16                     | 2       | 110            | 22             | 12               | 9    | 14   |
|          | 18                     | 2,5     | 125            | 25             | 14               | 11   | 15,5 |
|          | 20                     | 2,5     | 140            | 25             | 16               | 12   | 17,5 |
|          | 22                     | 2,5     | 140            | 27             | 18               | 14,5 | 19,5 |
|          | 24                     | 3       | 160            | 30             | 18               | 14,5 | 21   |
|          | 27                     | 3       | 160            | 30             | 20               | 16   | 24   |
|          | 30                     | 3,5     | 180            | 35             | 22               | 18   | 26,5 |
|          | 33                     | 3,5     | 180            | 35             | 25               | 20   | 29,5 |
|          | 36                     | 4       | 200            | 40             | 28               | 22   | 32   |
|          | 39                     | 4       | 200            | 40             | 32               | 24   | 35   |
|          | 42                     | 4,5     | 200            | 45             | 32               | 24   | 37,5 |
|          | 45                     | 4,5     | 220            | 45             | 36               | 29   | 40,5 |
|          | 48                     | 5       | 250            | 50             | 36               | 29   | 43   |
|          | 52                     | 5       | 250            | 50             | 40               | 32   | 47   |

DIN 371



DIN 352



**Z**  
CNC-controlled  
machines



6HX

TICN

HSSE

E / 1,5-2

E / 0

6HX

TICN

HSSE

E / 1,5-2

E / 0

6HX

TIN-70

HSSE-PM

B / 4-5

E / 0 / P

6HX

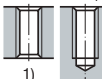
GLT-1

HSSE-PM

B / 4-5

E / 0 / P

max. 2 x d<sub>1</sub>



max. 2 x d<sub>1</sub>



max. 3 x d<sub>1</sub>



**K** 1.1-4.2  
**N** 1.5-1.6, 2.6  
**N** 4.1

**K** 1.1-4.2  
**N** 1.5-1.6, 2.6  
**N** 4.1

**P** 2.1-5.1

**P** 1.1-5.1  
**M** 1.1-4.1  
**K** 1.1-3.2  
**N** 1.4, 2.1-2.2  
**N** 2.4-2.5  
**S** 1.1, 2.2-2.3

Rekord  
2A-Z/E-1KZ  
TICN

Rekord  
2A-Z/E-1KZN  
TICN

Rekord  
2B-Z  
PM-TIN-70

Rekord  
2B-Z  
PM-GLT-1

**C1969401.0112**  
**C1969401.0114**  
**C1969401.0116**  
**C1969401.0118**  
**C1969401.0120**

C1099401.0112  
C1099401.0114  
C1099401.0116  
C1099401.0118  
C1099401.0120

**C0208F01.0112**  
**C0208F01.0114**  
**C0208F01.0116**  
**C0208F01.0118**  
**C0208F01.0120**

**C020A601.0112**  
**C020A601.0114**  
**C020A601.0116**  
**C020A601.0120**

C0208F01.0122  
**C0208F01.0124**

**C020A601.0124**

**C0208F01.0130**

**C020A601.0130**

108

108

108

108

1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

## Z

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

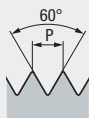




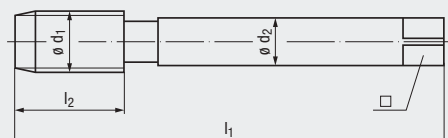
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# M

DIN 13



DIN  
376



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

Z  
CNC-controlled  
machines



6HX  
TIN  
HSSE  
R15  
E / 1,5-2  
E / 0

6HX  
TIN  
HSSE  
R15  
C / 2-3  
E / 0

6HX  
TIN  
HSSE  
R15  
E / 1,5-2  
E / 0

max. 2 x d<sub>1</sub>



P 3.1-5.1  
N 2.4-2.5

P 3.1-5.1  
N 2.4-2.5

P 3.1-5.1  
N 2.4-2.5

|          | Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |      | Rekord<br>2D-Z/E-1KZ<br>TIN | Rekord<br>2D-Z-BF<br>IKZ-TIN | Rekord<br>2D-Z/E-BF<br>IKZ-TIN |
|----------|------------------------|---------|----------------|----------------|------------------|------|------|-----------------------------|------------------------------|--------------------------------|
| <b>M</b> | 3                      | 0,5     | 56             | 6              | 2,2              | —    | 2,5  |                             |                              |                                |
|          | 4                      | 0,7     | 63             | 7              | 2,8              | 2,1  | 3,3  |                             |                              |                                |
|          | 5                      | 0,8     | 70             | 8              | 3,5              | 2,7  | 4,2  |                             |                              |                                |
|          | 6                      | 1       | 80             | 10             | 4,5              | 3,4  | 5    |                             |                              |                                |
|          | 7                      | 1       | 80             | 10             | 5,5              | 4,3  | 6    |                             |                              |                                |
|          | 8                      | 1,25    | 90             | 14             | 6                | 4,9  | 6,8  |                             |                              |                                |
|          | 9                      | 1,25    | 90             | 14             | 7                | 5,5  | 7,8  |                             |                              |                                |
|          | 10                     | 1,5     | 100            | 16             | 7                | 5,5  | 8,5  |                             |                              |                                |
|          | 11                     | 1,5     | 100            | 18             | 8                | 6,2  | 9,5  |                             |                              |                                |
|          | 12                     | 1,75    | 110            | 18             | 9                | 7    | 10,2 | C0983701.0112               | C4253701.0112                | C4053701.0112                  |
|          | 14                     | 2       | 110            | 20             | 11               | 9    | 12   |                             | C4253701.0114                |                                |
|          | 16                     | 2       | 110            | 22             | 12               | 9    | 14   | C0983701.0116               | C4253701.0116                | C4053701.0116                  |
|          | 18                     | 2,5     | 125            | 25             | 14               | 11   | 15,5 |                             | C4253701.0118                |                                |
|          | 20                     | 2,5     | 140            | 25             | 16               | 12   | 17,5 | C0983701.0120               | C4253701.0120                | C4053701.0120                  |
|          | 22                     | 2,5     | 140            | 27             | 18               | 14,5 | 19,5 |                             | C4253701.0122                |                                |
|          | 24                     | 3       | 160            | 30             | 18               | 14,5 | 21   |                             | C4253701.0124                |                                |
|          | 27                     | 3       | 160            | 30             | 20               | 16   | 24   |                             | C4253701.0127                |                                |
|          | 30                     | 3,5     | 180            | 35             | 22               | 18   | 26,5 |                             | C4253701.0130                |                                |
|          | 33                     | 3,5     | 180            | 35             | 25               | 20   | 29,5 |                             |                              |                                |
|          | 36                     | 4       | 200            | 40             | 28               | 22   | 32   |                             |                              |                                |
|          | 39                     | 4       | 200            | 40             | 32               | 24   | 35   |                             |                              |                                |
|          | 42                     | 4,5     | 200            | 45             | 32               | 24   | 37,5 |                             |                              |                                |
|          | 45                     | 4,5     | 220            | 45             | 36               | 29   | 40,5 |                             |                              |                                |
|          | 48                     | 5       | 250            | 50             | 36               | 29   | 43   |                             |                              |                                |
|          | 52                     | 5       | 250            | 50             | 40               | 32   | 47   |                             |                              |                                |
|          |                        |         |                |                |                  |      |      | 110                         | 110                          | 110                            |
|          |                        |         |                |                |                  |      |      |                             |                              |                                |

DIN 371



DIN 352



## Z



new



|           |         |           |           |           |         |           |           |
|-----------|---------|-----------|-----------|-----------|---------|-----------|-----------|
| 6HX       | 6HX     | 6HX       | 6HX       | 6GX       | 6GX     | 6GX       | 6GX       |
| GLT-1     | GLT-1   | GLT-1     | GLT-1     | GLT-1     | GLT-1   | GLT-1     | GLT-1     |
| HSSE-PM   | HSSE-PM | HSSE-PM   | HSSE-PM   | HSSE-PM   | HSSE-PM | HSSE-PM   | HSSE-PM   |
| R45       | R45     | R45       | R45       | R45       | R45     | R45       | R45       |
| C / 2-3   | C / 2-3 | E / 1,5-2 | E / 1,5-2 | C / 2-3   | C / 2-3 | E / 1,5-2 | E / 1,5-2 |
| E / O / P | E / O   | E / O / P | E / O     | E / O / P | E / O   | E / O / P | E / O     |

A technical cross-sectional diagram of a tapered roller bearing. It shows an outer ring with a tapered outer race, an inner ring with a tapered inner race, and several tapered rollers arranged between them. The rollers are wider at the ends and taper towards the center. The entire assembly is shown within a housing, with a dashed line indicating the axis of rotation.

[illegible]

| Enorm<br>2-Z<br>PM-GLT-1 | Enorm<br>2-Z-IKZ<br>PM-GLT-1 | Enorm<br>2-Z/E<br>PM-GLT-1 | Enorm<br>2-Z/E-IKZ<br>PM-GLT-1 | Enorm<br>2-Z<br>PM-GLT-1 | Enorm<br>2-Z-IKZ<br>PM-GLT-1 | Enorm<br>2-Z/E<br>PM-GLT-1 | Enorm<br>2-Z/E-IKZ<br>PM-GLT-1 |
|--------------------------|------------------------------|----------------------------|--------------------------------|--------------------------|------------------------------|----------------------------|--------------------------------|
|--------------------------|------------------------------|----------------------------|--------------------------------|--------------------------|------------------------------|----------------------------|--------------------------------|

[illegible]

|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                           |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|  111 |  111 |  111 |  111 |  111 |  111 |  111 |  111 |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|

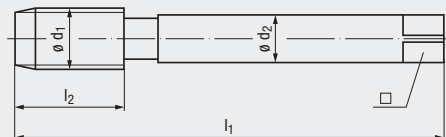
|  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|



|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



DIN 13



DIN  
376

Z  
CNC-controlled  
machines



ISO 2/6H

HSSE

R45

C / 2-3

E / O / P



ISO 2/6H

TIN

HSSE

R45

C / 2-3

E / O / P



ISO 2/6H

GLT-1

HSSE

R45

C / 2-3

E / O / P



ISO 2/6H

HSSE

R45

C / 2-3

E / O

new

Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

max. 3 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

» 78

P 1.1-3.1

P 1.1-4.1

N 2.2, 2.4-2.5

S 1.1

P 1.1-4.1

M 1.1-4.1

N 1.4, 2.1-2.2

N 2.4-2.5

S 1.1

P 1.1-3.1

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □   |      |
|------------------------|---------|----------------|----------------|------------------|-----|------|
| <b>M</b>               | 3       | 0,5            | 56             | 6                | 2,2 | —    |
|                        | 4       | 0,7            | 63             | 7                | 2,8 | 2,1  |
|                        | 5       | 0,8            | 70             | 8                | 3,5 | 2,7  |
|                        | 6       | 1              | 80             | 10               | 4,5 | 3,4  |
|                        | 7       | 1              | 80             | 10               | 5,5 | 4,3  |
|                        | 8       | 1,25           | 90             | 14               | 6   | 4,9  |
|                        | 9       | 1,25           | 90             | 14               | 7   | 5,5  |
|                        | 10      | 1,5            | 100            | 16               | 7   | 5,5  |
|                        | 11      | 1,5            | 100            | 18               | 8   | 6,2  |
|                        | 12      | 1,75           | 110            | 18               | 9   | 7    |
|                        | 14      | 2              | 110            | 20               | 11  | 9    |
|                        | 16      | 2              | 110            | 22               | 12  | 9    |
|                        | 18      | 2,5            | 125            | 25               | 14  | 11   |
|                        | 20      | 2,5            | 140            | 25               | 16  | 12   |
|                        | 22      | 2,5            | 140            | 27               | 18  | 14,5 |
|                        | 24      | 3              | 160            | 30               | 18  | 14,5 |
|                        | 27      | 3              | 160            | 30               | 20  | 16   |
|                        | 30      | 3,5            | 180            | 35               | 22  | 18   |
|                        | 33      | 3,5            | 180            | 35               | 25  | 20   |
|                        | 36      | 4              | 200            | 40               | 28  | 22   |
|                        | 39      | 4              | 200            | 40               | 32  | 24   |
|                        | 42      | 4,5            | 200            | 45               | 32  | 24   |
|                        | 45      | 4,5            | 220            | 45               | 36  | 29   |
|                        | 48      | 5              | 250            | 50               | 36  | 29   |
|                        | 52      | 5              | 250            | 50               | 40  | 32   |

DIN 371



DIN 352



112

112

112

**Z**  
CNC-controlled  
machines

|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |  |  |
| ISO 2/6H<br>GLT-1<br>HSSE<br>R45<br>C / 2-3<br>E / O                              | ISO 2/6H<br>GLT-1<br>HSSE<br>R45<br>E / 1,5-2<br>E / O / P                        | ISO 2/6H<br>TIN<br>HSSE<br>R45<br>E / 1,5-2<br>E / O / P                          | ISO 2/6H<br>GLT-1<br>HSSE<br>R45<br>E / 1,5-2<br>E / O / P                        | ISO 2/6H<br>TIN<br>HSSE<br>R45<br>E / 1,5-2<br>E / O                              | ISO 2/6H<br>GLT-1<br>HSSE<br>R45<br>E / 1,5-2<br>E / O                            | ISO 1/4H<br>GLT-1<br>HSSE<br>R45<br>C / 2-3<br>E / O / P                            | ISO 1/4H<br>GLT-1<br>HSSE<br>R45<br>C / 2-3<br>E / O / P                            |

max. 3 x d<sub>1</sub>

|                                                                                                   |                                                                                                    |                                                           |                                                                                                   |                                                           |                                                                                                   |                                                 |                                                                                                   |
|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1 | <b>P</b> 1.1-3.1                                                                                   | <b>P</b> 1.1-4.1<br><b>N</b> 2.2, 2.4-2.5<br><b>S</b> 1.1 | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1 | <b>P</b> 1.1-4.1<br><b>N</b> 2.2, 2.4-2.5<br><b>S</b> 1.1 | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1 | <b>P</b> 1.1-3.1                                | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1 |
| Enorm 2-Z-IKZ GLT-1                                                                               | Enorm 2-Z/E                                                                                        | Enorm 2-Z/E TIN                                           | Enorm 2-Z/E GLT-1                                                                                 | Enorm 2-Z/E-IKZ TIN                                       | Enorm 2-Z/E-IKZ GLT-1                                                                             | Enorm 2-Z                                       | Enorm 2-Z GLT-1                                                                                   |
| C099C400.0112                                                                                     | C0513500.0112<br>C0513500.0114                                                                     | C0513700.0112<br>C0513700.0114                            | C051C400.0112                                                                                     | C0973700.0112<br>C0973700.0114                            | C097C400.0112<br>C097C400.0114                                                                    | C0503510.0112<br>C0503510.0114                  | C050C410.0112<br>C050C410.0114                                                                    |
| C099C400.0116                                                                                     | C0513500.0116<br>C0513500.0118                                                                     | C0513700.0116<br>C0513700.0118                            | C051C400.0116                                                                                     | C0973700.0116                                             | C097C400.0116                                                                                     | C0503510.0116<br>C0503510.0118                  | C050C410.0116<br>C050C410.0118                                                                    |
| C099C400.0120                                                                                     | C0513500.0120<br>C0513500.0122<br>C0513500.0124                                                    | C0513700.0120<br>C0513700.0122<br>C0513700.0124           | C051C400.0120                                                                                     | C0973700.0120                                             | C097C400.0120                                                                                     | C0503510.0120<br>C0503510.0122<br>C0503510.0124 | C050C410.0120<br>C050C410.0122<br>C050C410.0124                                                   |
|                                                                                                   | C0513500.0127<br>C0513500.0130<br>C0513500.0133<br>C0513500.0136<br>C0513500.0139<br>C0513500.0142 |                                                           |                                                                                                   |                                                           |                                                                                                   |                                                 |                                                                                                   |
|                                                                                                   | C0513500.0148                                                                                      |                                                           |                                                                                                   |                                                           |                                                                                                   |                                                 |                                                                                                   |
| 112                                                                                               | 113                                                                                                | 113                                                       | 113                                                                                               | 113                                                       | 113                                                                                               | 113                                             | 113                                                                                               |
|                                                                                                   | 151                                                                                                |                                                           |                                                                                                   |                                                           |                                                                                                   |                                                 |                                                                                                   |

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

Accessories

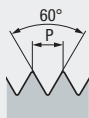


|   |    |
|---|----|
| M | 3  |
|   | 4  |
|   | 5  |
|   | 6  |
|   | 7  |
|   | 8  |
|   | 9  |
|   | 10 |
|   | 11 |
|   | 12 |
|   | 14 |
|   | 16 |
|   | 18 |
|   | 20 |
|   | 22 |
|   | 24 |
|   | 27 |
|   | 30 |
|   | 33 |
|   | 36 |
|   | 39 |
|   | 42 |
|   | 45 |
|   | 48 |
|   | 52 |

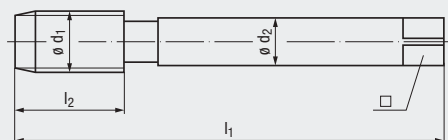
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# M

DIN 13



DIN  
376



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

max. 3 x d<sub>1</sub>



|                  |                                                                                                   |                  |                                                           |
|------------------|---------------------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------|
| <b>P</b> 1.1-3.1 | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1 | <b>P</b> 1.1-3.1 | <b>P</b> 1.1-4.1<br><b>N</b> 2.2, 2.4-2.5<br><b>S</b> 1.1 |
|------------------|---------------------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------|

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |      | Enorm<br>2-Z                   | Enorm<br>2-Z<br>GLT-1          | Enorm<br>2-Z/E                 | Enorm<br>2-Z/E<br>TIN          |
|------------------------|---------|----------------|----------------|------------------|------|------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| <b>M</b> 3             | 0,5     | 56             | 6              | 2,2              | —    | 2,5  |                                |                                |                                |                                |
| 4                      | 0,7     | 63             | 7              | 2,8              | 2,1  | 3,3  |                                |                                |                                |                                |
| 5                      | 0,8     | 70             | 8              | 3,5              | 2,7  | 4,2  |                                |                                |                                |                                |
| 6                      | 1       | 80             | 10             | 4,5              | 3,4  | 5    |                                |                                |                                |                                |
| 7                      | 1       | 80             | 10             | 5,5              | 4,3  | 6    |                                |                                |                                |                                |
| 8                      | 1,25    | 90             | 14             | 6                | 4,9  | 6,8  |                                |                                |                                |                                |
| 9                      | 1,25    | 90             | 14             | 7                | 5,5  | 7,8  |                                |                                |                                |                                |
| 10                     | 1,5     | 100            | 16             | 7                | 5,5  | 8,5  |                                |                                |                                |                                |
| 11                     | 1,5     | 100            | 18             | 8                | 6,2  | 9,5  |                                |                                |                                |                                |
| 12                     | 1,75    | 110            | 18             | 9                | 7    | 10,2 |                                |                                |                                |                                |
| 14                     | 2       | 110            | 20             | 11               | 9    | 12   | C0503520.0112<br>C0503520.0114 | C050C420.0112<br>C050C420.0114 | C0513520.0112<br>C0513520.0114 | C0513720.0112<br>C0513720.0114 |
| 16                     | 2       | 110            | 22             | 12               | 9    | 14   | C0503520.0116<br>C0503520.0118 | C050C420.0116<br>C050C420.0118 | C0513520.0116<br>C0513520.0118 | C0513720.0116<br>C0513720.0118 |
| 18                     | 2,5     | 125            | 25             | 14               | 11   | 15,5 | C0503520.0120<br>C0503520.0122 | C050C420.0120<br>C050C420.0122 | C0513520.0120<br>C0513520.0122 | C0513720.0120<br>C0513720.0122 |
| 20                     | 2,5     | 140            | 25             | 16               | 12   | 17,5 | C0503520.0124                  | C050C420.0124                  |                                |                                |
| 22                     | 2,5     | 140            | 27             | 18               | 14,5 | 19,5 |                                |                                |                                |                                |
| 24                     | 3       | 160            | 30             | 18               | 14,5 | 21   |                                |                                |                                |                                |
| 27                     | 3       | 160            | 30             | 20               | 16   | 24   |                                |                                |                                |                                |
| 30                     | 3,5     | 180            | 35             | 22               | 18   | 26,5 |                                |                                |                                |                                |
| 33                     | 3,5     | 180            | 35             | 25               | 20   | 29,5 |                                |                                |                                |                                |
| 36                     | 4       | 200            | 40             | 28               | 22   | 32   |                                |                                |                                |                                |
| 39                     | 4       | 200            | 40             | 32               | 24   | 35   |                                |                                |                                |                                |
| 42                     | 4,5     | 200            | 45             | 32               | 24   | 37,5 |                                |                                |                                |                                |
| 45                     | 4,5     | 220            | 45             | 36               | 29   | 40,5 |                                |                                |                                |                                |
| 48                     | 5       | 250            | 50             | 36               | 29   | 43   |                                |                                |                                |                                |
| 52                     | 5       | 250            | 50             | 40               | 32   | 47   |                                |                                |                                |                                |

DIN 371



114

114

114

114

DIN 352



|                |                |   |    |             |             |                     |                   |          |    |                  |          |           |                |                        |
|----------------|----------------|---|----|-------------|-------------|---------------------|-------------------|----------|----|------------------|----------|-----------|----------------|------------------------|
| Product Finder | V <sub>c</sub> | M | MF | UNC<br>UN-3 | UNF<br>UNEF | G, Rp<br>NPSM, NPSF | NPT, NPT<br>Rc, W | BSW, BSF | Pg | MJ<br>UNJC, UNJF | EG (STI) | SELF-LOCK | Tr, Tr-F<br>Rd | Zubehör<br>Accessories |
|----------------|----------------|---|----|-------------|-------------|---------------------|-------------------|----------|----|------------------|----------|-----------|----------------|------------------------|

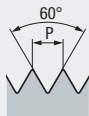


**EMUGE**  
**FRANKEN**

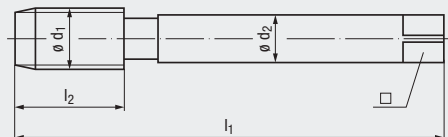
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# M

DIN 13



DIN  
376



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

Z  
CNC-controlled  
machines



new



6HX

HSSE

R50

C / 2-3

E / O / P

6HX

GLT-1

HSSE

R50

C / 2-3

E / O / P

max. 3 x d<sub>1</sub>



P 1.1-3.1

P 1.1-4.1

M 1.1-4.1

N 1.4, 2.1-2.2

N 2.4-2.5

S 1.1

Enorm  
2-Z50

Enorm  
2-Z50  
GLT-1

|          | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |      |
|----------|------------------------|---------|----------------|----------------|------------------|------|------|
| <b>M</b> | 3                      | 0,5     | 56             | 6              | 2,2              | —    | 2,5  |
|          | 4                      | 0,7     | 63             | 7              | 2,8              | 2,1  | 3,3  |
|          | 5                      | 0,8     | 70             | 8              | 3,5              | 2,7  | 4,2  |
|          | 6                      | 1       | 80             | 10             | 4,5              | 3,4  | 5    |
|          | 7                      | 1       | 80             | 10             | 5,5              | 4,3  | 6    |
|          | 8                      | 1,25    | 90             | 14             | 6                | 4,9  | 6,8  |
|          | 9                      | 1,25    | 90             | 14             | 7                | 5,5  | 7,8  |
|          | 10                     | 1,5     | 100            | 16             | 7                | 5,5  | 8,5  |
|          | 11                     | 1,5     | 100            | 18             | 8                | 6,2  | 9,5  |
|          | 12                     | 1,75    | 110            | 18             | 9                | 7    | 10,2 |
|          | 14                     | 2       | 110            | 20             | 11               | 9    | 12   |
|          | 16                     | 2       | 110            | 22             | 12               | 9    | 14   |
|          | 18                     | 2,5     | 125            | 25             | 14               | 11   | 15,5 |
|          | 20                     | 2,5     | 140            | 25             | 16               | 12   | 17,5 |
|          | 22                     | 2,5     | 140            | 27             | 18               | 14,5 | 19,5 |
|          | 24                     | 3       | 160            | 30             | 18               | 14,5 | 21   |
|          | 27                     | 3       | 160            | 30             | 20               | 16   | 24   |
|          | 30                     | 3,5     | 180            | 35             | 22               | 18   | 26,5 |
|          | 33                     | 3,5     | 180            | 35             | 25               | 20   | 29,5 |
|          | 36                     | 4       | 200            | 40             | 28               | 22   | 32   |
|          | 39                     | 4       | 200            | 40             | 32               | 24   | 35   |
|          | 42                     | 4,5     | 200            | 45             | 32               | 24   | 37,5 |
|          | 45                     | 4,5     | 220            | 45             | 36               | 29   | 40,5 |
|          | 48                     | 5       | 250            | 50             | 36               | 29   | 43   |
|          | 52                     | 5       | 250            | 50             | 40               | 32   | 47   |
|          |                        |         |                |                |                  |      |      |
|          |                        |         |                |                |                  |      |      |
|          |                        |         |                |                |                  |      |      |
|          |                        |         |                |                |                  |      |      |
|          |                        |         |                |                |                  |      |      |
|          |                        |         |                |                |                  |      |      |

DIN 371



116

DIN 352

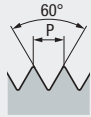


116

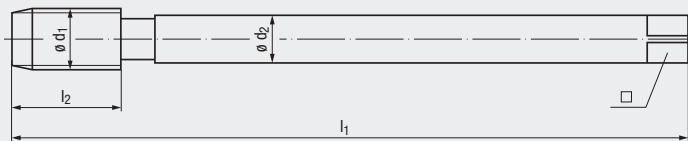


**M**

DIN 13



Mit extra langem Schaft  
With extra long shank



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| $\varnothing d_1$<br>mm | P<br>mm | $l_1$ | $l_2$ | $\varnothing d_2$ | $\square$ |      | Rekord<br>2B-STEEL-L<br>LS | Rekord<br>2D-STEEL/E<br>LS | Rekord<br>2DF-STEEL<br>LS-TIN |
|-------------------------|---------|-------|-------|-------------------|-----------|------|----------------------------|----------------------------|-------------------------------|
| <b>M</b> 6              | 1       | 160   | 17    | 4,5               | 3,4       | 5    | C2208900.0060              | C2461000.0060              |                               |
| 8                       | 1,25    | 180   | 20    | 6                 | 4,9       | 6,8  | C2208900.0080              | C2461000.0080              |                               |
| 10                      | 1,5     | 200   | 22    | 7                 | 5,5       | 8,5  | C2208900.0100              | C2461000.0100              |                               |
| 12                      | 1,75    | 224   | 24    | 9                 | 7         | 10,2 | C2208900.0112              | C2461000.0112              | C2401400.0112                 |
| 14                      | 2       | 224   | 26    | 11                | 9         | 12   | C2208900.0114              | C2461000.0114              |                               |
| 16                      | 2       | 224   | 27    | 12                | 9         | 14   | C2208900.0116              | C2461000.0116              | C2401400.0116                 |
| 18                      | 2,5     | 250   | 30    | 14                | 11        | 15,5 | C2208900.0118              | C2461000.0118              |                               |
| 20                      | 2,5     | 280   | 32    | 16                | 12        | 17,5 | C2208900.0120              | C2461000.0120              |                               |
|                         |         |       |       |                   |           |      | 117                        | 117                        | 117                           |

**STEEL**  
Steel  
materials


new



2)



1)



1)

ISO 2/6H

HSSE

B / 4-5

E / O

max. 3 x  $d_1$ 


ISO 2/6H

HSSE

R15

E / 1,5-2

E / O

max. 2 x  $d_1$ 


ISO 2/6H

TIN

HSSE

R15

C / 2-3


**P** 1.1-3.1  
**N** 2.2

**P** 2.1-3.1

**P** 3.1-4.1

1) Auch mit innerer Kühlschmierstoff-Zufuhr IKZ möglich  
Also available with internal coolant supply IKZ

2) Auch mit innerer Kühlschmierstoff-Zufuhr IKZN möglich  
Also available with internal coolant supply IKZN

Product  
Finder

V<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

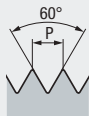
Tr, Tr-F  
Rd

Zubehör  
Accessories

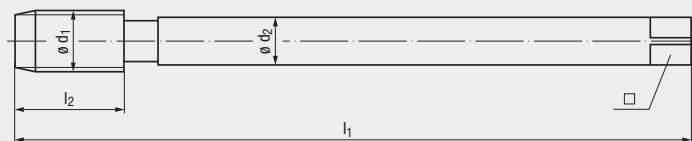

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# M

DIN 13



Mit extra langem Schaft  
With extra long shank



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material



78

VA  
Stainless steel  
materials



2)



2)



l<sub>2</sub> ≈ 10 x P

1)

ISO 2/6H  
NT  
HSSE

B / 4-5  
E / O / P

ISO 2/6H  
GLT-1  
HSSE

B / 4-5  
E / O / P

ISO 2/6H  
HSSE  
R35  
C / 2-3  
E / O / P

max. 3 x d<sub>1</sub>



max. 2,5 x d<sub>1</sub>



P 2.1-3.1  
N 2.2, 2.5

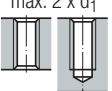
P 1.1-4.1  
M 1.1-4.1  
N 2.2

P 1.1-3.1

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □   |      | Rekord<br>2B-VA<br>LS-NT | Rekord<br>2B-VA<br>LS-GLT-1 | Enorm<br>2-VA<br>LS |
|------------------------|---------|----------------|----------------|------------------|-----|------|--------------------------|-----------------------------|---------------------|
| <b>M</b> 6             | 1       | 160            | 17             | 4,5              | 3,4 | 5    | C2203000.0060            | C220C300.0060               |                     |
| 8                      | 1,25    | 180            | 20             | 6                | 4,9 | 6,8  | C2203000.0080            | C220C300.0080               |                     |
| 10                     | 1,5     | 200            | 22             | 7                | 5,5 | 8,5  | C2203000.0100            | C220C300.0100               |                     |
| 12                     | 1,75    | 224            | 24             | 9                | 7   | 10,2 | C2203000.0112            | C220C300.0112               | C2503000.0112       |
| 14                     | 2       | 224            | 26             | 11               | 9   | 12   | C2203000.0114            | C220C300.0114               | C2503000.0114       |
| 16                     | 2       | 224            | 27             | 12               | 9   | 14   | C2203000.0116            | C220C300.0116               | C2503000.0116       |
| 18                     | 2,5     | 250            | 30             | 14               | 11  | 15,5 | C2203000.0118            | C220C300.0118               | C2503000.0118       |
| 20                     | 2,5     | 280            | 32             | 16               | 12  | 17,5 | C2203000.0120            | C220C300.0120               | C2503000.0120       |
|                        |         |                |                |                  |     |      | 118                      | 118                         | 118                 |

1) Auch mit innerer Kühlschmierstoff-Zufuhr IKZ möglich  
Also available with internal coolant supply IKZ

2) Auch mit innerer Kühlschmierstoff-Zufuhr IKZN möglich  
Also available with internal coolant supply IKZN

| <b>H</b><br>Materials of high tensile strength                                                                                                                          |  | <b>Z</b><br>CNC-controlled machines                                                                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |    |  |                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--|-----------------------------------------------------|
| <br> |  | <br> | <br> | <br> |    |  |                                                     |
| 1) 2)                                                                                                                                                                   |  | $l_2 \approx 10 \times P$                                                                                                                                               | 1)                                                                                                                                                                      | $l_2 \approx 10 \times P$                                                                                                                                               | 1) |  |                                                     |
| 6HX<br>NT<br>HSSE                                                                                                                                                       |  | 6HX<br>TIN<br>HSSE<br>R15                                                                                                                                               | ISO 2/6H<br>HSSE<br>R45                                                                                                                                                 | ISO 2/6H<br>GLT-1<br>HSSE<br>R45                                                                                                                                        |    |  |                                                     |
| C / 2-3<br>E / O / P                                                                                                                                                    |  | C / 2-3<br>E / O                                                                                                                                                        | C / 2-3<br>E / O / P                                                                                                                                                    | C / 2-3<br>E / O / P                                                                                                                                                    |    |  |                                                     |
| max. 2 x d <sub>1</sub><br>                                                          |  | max. 2 x d <sub>1</sub><br>                                                          | max. 3 x d <sub>1</sub><br>                                                          |                                                                                                                                                                         |    |  |                                                     |
| <b>K</b> 1.1-4.2<br><b>N</b> 4.1                                                                                                                                        |  | <b>P</b> 3.1-5.1<br><b>N</b> 2.4-2.5                                                                                                                                    | <b>P</b> 1.1-3.1                                                                                                                                                        | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1                                                                       |    |  |                                                     |
| <b>Rekord</b><br>2A-H<br>LS-NT                                                                                                                                          |  | <b>Rekord</b><br>2D-Z-BF-IKZ<br>LS-TIN                                                                                                                                  | <b>Enorm</b><br>2-Z<br>LS                                                                                                                                               | <b>Enorm</b><br>2-Z-LS<br>GLT-1                                                                                                                                         |    |  |                                                     |
| C2100501.0060<br>C2100501.0080<br>C2100501.0100<br>C2100501.0112<br>C2100501.0114<br>C2100501.0116<br>C2100501.0118<br>C2100501.0120                                    |  | C4093701.0112<br>C4093701.0116                                                                                                                                          | C2503500.0060<br>C2503500.0080<br>C2503500.0100<br>C2503500.0112<br>C2503500.0114<br>C2503500.0116<br>C2503500.0118<br>C2503500.0120                                    | C250C400.0060<br>C250C400.0080<br>C250C400.0100<br>C250C400.0112<br>C250C400.0114<br>C250C400.0116<br>C250C400.0118<br>C250C400.0120                                    |    |  | <b>M</b> 6<br>8<br>10<br>12<br>14<br>16<br>18<br>20 |
|  119                                                                                 |  |  119                                                                                 |  119                                                                                 |  119                                                                                 |    |  |                                                     |

Product Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

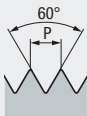
Tr, Tr-F  
Rd

Zubehör  
Accessories


|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# M

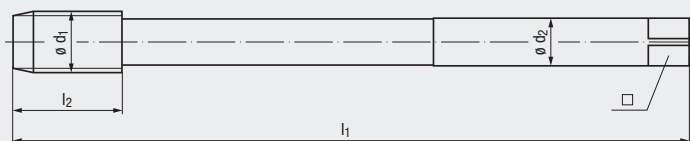
DIN 13



**Z**  
CNC-controlled  
machines



Mit langen Nuten und langem Schaft für Gewindetiefen bis max. 3 x d<sub>1</sub>  
With long flutes and long shank for thread depths up to max. 3 x d<sub>1</sub>



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

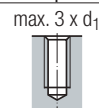
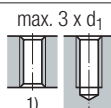


6HX  
TICN  
HSSE  
C / 2-3  
E / O

6HX  
TIN  
HSSE  
R15  
C / 2-3  
E / O

6HX  
TIN  
HSSE  
R15  
C / 2-3  
E / O

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 78

**P** 3.1-4.1  
**K** 1.1-4.2

**P** 3.1-5.1  
**N** 2.4-2.5

**P** 3.1-5.1  
**N** 2.4-2.5

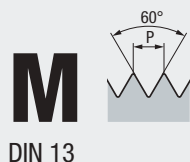
| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |      | Rekord<br>2A-Z-1KZ-LF3<br>TICN | Rekord<br>2D-Z-1KZ-LF3<br>TIN | Rekord<br>2D-Z-BF-1KZ-LF3<br>TIN |
|------------------------|---------|----------------|----------------|------------------|------|------|--------------------------------|-------------------------------|----------------------------------|
| <b>M</b> 24            | 3       | 215            | 30             | 18               | 14,5 | 21   | <b>C0579401.0124</b>           | <b>C4963701.0124</b>          | C4973701.0124                    |
| 30                     | 3,5     | 240            | 35             | 22               | 18   | 26,5 | <b>C0579401.0130</b>           | <b>C4963701.0130</b>          | C4973701.0130                    |
| 33                     | 3,5     | 255            | 35             | 25               | 20   | 29,5 | <b>C0579401.0133</b>           | <b>C4963701.0133</b>          | C4973701.0133                    |
| 36                     | 4       | 275            | 40             | 28               | 22   | 32   | <b>C0579401.0136</b>           | <b>C4963701.0136</b>          | C4973701.0136                    |
| 42                     | 4,5     | 295            | 45             | 32               | 24   | 37,5 | <b>C0579401.0142</b>           | <b>C4963701.0142</b>          | C4973701.0142                    |

1) Gewindebohren in Durchgangslöchern nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication



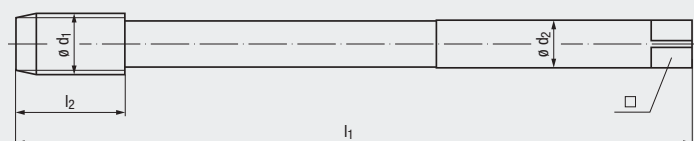
Zum Spannen von Gewindebohrern für die Herstellung großer Gewinde empfehlen wir die Verwendung von Aufnahmen der Typenreihen Softsynchro® und HF. Diese finden Sie auf den Seiten 620 - 621, 629 - 630 und 709 - 715.

For the clamping of taps for the production of large threads, we recommend using our holders of the Softsynchro® and HF series. You will find these on pages 620 - 621, 629 - 630 and 709 - 715.



DIN 13

Mit langen Nuten und langem Schaft für Gewindetiefen bis max. 4 x d<sub>1</sub>  
With long flutes and long shank for thread depths up to max. 4 x d<sub>1</sub>



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |      |  | Rekord<br>2A-Z-IKZ-LF4<br>TICN | Rekord<br>2D-Z-IKZ-LF4<br>TIN | Rekord<br>2D-Z-BF-IKZ-LF4<br>TIN |
|------------------------|---------|----------------|----------------|------------------|------|------|--|--------------------------------|-------------------------------|----------------------------------|
| <b>M</b> 20            | 2,5     | 190            | 25             | 16               | 12   | 17,5 |  | <b>C0539401.0120</b>           | <b>C4283701.0120</b>          | C4063701.0120                    |
| 22                     | 2,5     | 230            | 27             | 18               | 14,5 | 19,5 |  | <b>C0539401.0122</b>           | <b>C4283701.0122</b>          | C4063701.0122                    |
| 24                     | 3       | 240            | 30             | 18               | 14,5 | 21   |  | <b>C0539401.0124</b>           | <b>C4283701.0124</b>          | C4063701.0124                    |
| 27                     | 3       | 250            | 30             | 20               | 16   | 24   |  | <b>C0539401.0127</b>           | <b>C4283701.0127</b>          | C4063701.0127                    |
| 30                     | 3,5     | 270            | 35             | 22               | 18   | 26,5 |  | <b>C0539401.0130</b>           | <b>C4283701.0130</b>          | C4063701.0130                    |
| 33                     | 3,5     | 290            | 35             | 25               | 20   | 29,5 |  | <b>C0539401.0133</b>           | <b>C4283701.0133</b>          | C4063701.0133                    |
| 36                     | 4       | 310            | 40             | 28               | 22   | 32   |  | <b>C0539401.0136</b>           | <b>C4283701.0136</b>          | C4063701.0136                    |
| 42                     | 4,5     | 340            | 45             | 32               | 24   | 37,5 |  | <b>C0539401.0142</b>           | <b>C4283701.0142</b>          | C4063701.0142                    |
| 45                     | 4,5     | 360            | 45             | 36               | 29   | 40,5 |  | <b>C0539401.0145</b>           | <b>C4283701.0145</b>          | C4063701.0145                    |
| 48                     | 5       | 380            | 50             | 36               | 29   | 43   |  | <b>C0539401.0148</b>           |                               |                                  |

1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

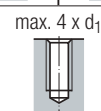
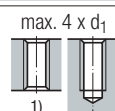
**Z**  
CNC-controlled  
machines



6HX  
TICN  
HSSE  
C / 2-3  
E / O

6HX  
TIN  
HSSE  
R15  
C / 2-3  
E / O

6HX  
TIN  
HSSE  
R15  
C / 2-3  
E / O



**P** 3.1-4.1  
**K** 1.1-4.2

**P** 3.1-5.1  
**N** 2.4-2.5

**P** 3.1-5.1  
**N** 2.4-2.5

Product  
Finder

V<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

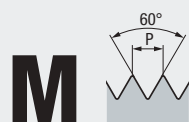
SELF-LOCK

Tr, Tr-F  
Rd

Zubehör  
Accessories



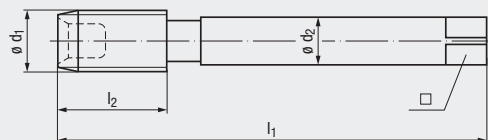
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



DIN 13

DIN  
376

Mit Spanglocke  
With internal chip collector



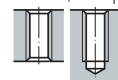
Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

max. 1,5 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

» 78

6HX  
NE2  
HSSE  
C / 2-3  
P / O 1)

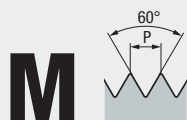
6HX  
TIN  
HSSE  
C / 2-3  
P / O 1)

P 1.1-3.1  
K 1.1-4.2

P 1.1-3.1  
K 1.1-4.2

|          | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |      | Robust<br>2X-VA<br>NE2 | Robust<br>2X-VA<br>TIN |
|----------|------------------------|---------|----------------|----------------|------------------|------|------|------------------------|------------------------|
| <b>M</b> | 24                     | 3       | 160            | 34             | 18               | 14,5 | 21   | C0803001.0124          | C0803101.0124          |
|          | 27                     | 3       | 160            | 36             | 20               | 16   | 24   | C0803001.0127          | C0803101.0127          |
|          | 30                     | 3,5     | 180            | 40             | 22               | 18   | 26,5 | C0803001.0130          | C0803101.0130          |
|          | 33                     | 3,5     | 180            | 40             | 25               | 20   | 29,5 | C0803001.0133          | C0803101.0133          |
|          | 36                     | 4       | 200            | 50             | 28               | 22   | 32   | C0803001.0136          | C0803101.0136          |
|          | 39                     | 4       | 200            | 50             | 32               | 24   | 35   | C0803001.0139          | C0803101.0139          |
|          | 42                     | 4,5     | 200            | 56             | 32               | 24   | 37,5 | C0803001.0142          | C0803101.0142          |
|          | 45                     | 4,5     | 220            | 58             | 36               | 29   | 40,5 | C0803001.0145          | C0803101.0145          |
|          | 48                     | 5       | 250            | 65             | 36               | 29   | 43   | C0803001.0148          | C0803101.0148          |
|          | 52                     | 5       | 250            | 65             | 40               | 32   | 47   | C0803001.0152          | C0803101.0152          |
|          | 56                     | 5,5     | 250            | 70             | 40               | 32   | 50,5 | C0803001.0156          | C0803101.0156          |
|          | 60                     | 5,5     | 280            | 70             | 45               | 35   | 54,5 | C0803001.0160          | C0803101.0160          |
|          | 64                     | 6       | 315            | 75             | 50               | 39   | 58   | C0803001.0164          | C0803101.0164          |

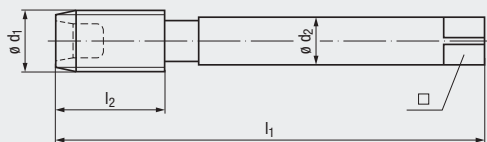
1) Bevorzugt mit Pastenschmierung einsetzen, neben Werkzeug auch Bohrungswandung einstreichen.  
Ölschmierung ist nur bei senkrechter Grundlochbearbeitung möglich, wenn das Grundloch mit Öl vollgefüllt ist.  
If possible, use paste lubrication, coating both the tool and the walls of the drilled hole.  
Lubrication with oil is possible only in the vertical machining of blind holes, if the hole is entirely filled with oil.



DIN 13

DIN  
376

Mit Spanglocke  
With internal chip collector



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |      | Robust<br>2ST-VA<br>NE2 | Robust<br>2ST-VA<br>TIN |
|------------------------|---------|----------------|----------------|------------------|------|------|-------------------------|-------------------------|
| <b>M</b> 24            | 3       | 160            | 34             | 18               | 14,5 | 21   | <b>C2023001.0124</b>    | C2023101.0124           |
| 27                     | 3       | 160            | 36             | 20               | 16   | 24   | <b>C2023001.0127</b>    | C2023101.0127           |
| 30                     | 3,5     | 180            | 40             | 22               | 18   | 26,5 | <b>C2023001.0130</b>    | C2023101.0130           |
| 33                     | 3,5     | 180            | 40             | 25               | 20   | 29,5 | <b>C2023001.0133</b>    | C2023101.0133           |
| 36                     | 4       | 200            | 50             | 28               | 22   | 32   | <b>C2023001.0136</b>    | C2023101.0136           |
| 39                     | 4       | 200            | 50             | 32               | 24   | 35   | <b>C2023001.0139</b>    | C2023101.0139           |
| 42                     | 4,5     | 200            | 56             | 32               | 24   | 37,5 | <b>C2023001.0142</b>    | C2023101.0142           |
| 45                     | 4,5     | 220            | 58             | 36               | 29   | 40,5 | <b>C2023001.0145</b>    | C2023101.0145           |
| 48                     | 5       | 250            | 65             | 36               | 29   | 43   | <b>C2023001.0148</b>    | C2023101.0148           |
| 52                     | 5       | 250            | 65             | 40               | 32   | 47   | <b>C2023001.0152</b>    | C2023101.0152           |
| 56                     | 5,5     | 250            | 70             | 40               | 32   | 50,5 | <b>C2023001.0156</b>    | C2023101.0156           |
| 60                     | 5,5     | 280            | 70             | 45               | 35   | 54,5 | <b>C2023001.0160</b>    | C2023101.0160           |
| 64                     | 6       | 315            | 75             | 50               | 39   | 58   | <b>C2023001.0164</b>    | C2023101.0164           |

VA  
Stainless steel  
materials

new



new



6HX

NE2

HSSE

C / 2-3

P / 0 1)

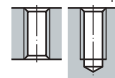
6HX

TIN

HSSE

C / 2-3

P / 0 1)

max. 1,5 x d<sub>1</sub>**P** 1.1-3.1**K** 1.1-4.2**P** 1.1-3.1**K** 1.1-4.2

- 1) Bevorzugt mit Pastenschmierung einsetzen, neben Werkzeug auch Bohrungswandung einstreichen.  
Ölschmierung ist nur bei senkrechter Grundlochbearbeitung möglich, wenn das Grundloch mit Öl vollgefüllt ist.  
If possible, use paste lubrication, coating both the tool and the walls of the drilled hole.  
Lubrication with oil is possible only in the vertical machining of blind holes, if the hole is entirely filled with oil.

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

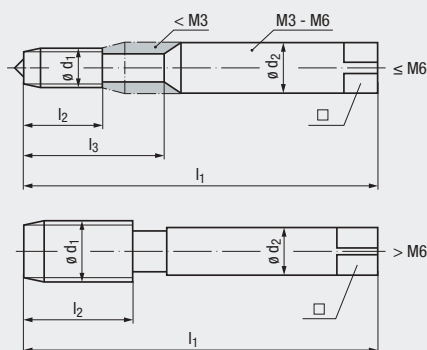
Accessories







DIN 13



DIN  
352

STEEL  
Steel  
materials



new



6HX \*)

6HX

ISO 2/6H

ISO 2/6H

HSSE

HSSE

HSSE

HSSE

LH

B / 4-5

R15

C / 2-3

C / 2-3

E / 0

C / 2-3

E / 0

E / 0

E / 0

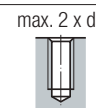
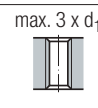
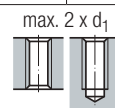
E / 0

Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 78

K 1.1-4.2  
N 2.3

K 1.1-4.2  
N 2.3

P 1.1-3.1  
N 2.2

P 2.1-3.1

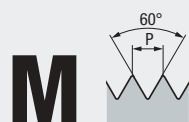
| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |      | Rekord<br>A-STEEL | Rekord<br>A-STEEL-LH | Rekord<br>B-STEEL-L | Rekord<br>D-STEEL |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|-------------------|----------------------|---------------------|-------------------|
| <b>M</b>               | 1       | 0,25           | 32             | 5              | —                | 2,5 | 2,1  | 0,75              | A0101001.0010        |                     |                   |
|                        | 1,1     | 0,25           | 32             | 5              | —                | 2,5 | 2,1  | 0,85              |                      |                     |                   |
|                        | 1,2     | 0,25           | 32             | 5              | —                | 2,5 | 2,1  | 0,95              | A0101001.0012        |                     |                   |
|                        | 1,4     | 0,3            | 32             | 7              | —                | 2,5 | 2,1  | 1,1               | A0101001.0014        |                     |                   |
|                        | 1,6     | 0,35           | 32             | 8              | —                | 2,5 | 2,1  | 1,25              | A0101001.0016        |                     |                   |
|                        | 1,8     | 0,35           | 32             | 8              | —                | 2,5 | 2,1  | 1,45              |                      |                     |                   |
|                        | 2       | 0,4            | 36             | 8              | —                | 2,8 | 2,1  | 1,6               | A0101001.0020        |                     |                   |
|                        | 2,2     | 0,45           | 36             | 9              | —                | 2,8 | 2,1  | 1,75              | A0101001.0022        |                     |                   |
|                        | 2,3     | 0,4            | 36             | 9              | —                | 2,8 | 2,1  | 1,9               | A0101001.0023        |                     |                   |
|                        | 2,5     | 0,45           | 40             | 9              | —                | 2,8 | 2,1  | 2,05              | A0101001.0025        |                     |                   |
|                        | 2,6     | 0,45           | 40             | 9              | —                | 2,8 | 2,1  | 2,15              | A0101001.0026        |                     |                   |
|                        | 3       | 0,5            | 40             | 10             | 18               | 3,5 | 2,7  | 2,5               | A0101001.0030        | A0101051.0030       | A0208900.0030     |
|                        | 3,5     | 0,6            | 45             | 11             | 20               | 4   | 3    | 2,9               | A0101001.0035        |                     | A0208900.0035     |
|                        | 4       | 0,7            | 45             | 12             | 22               | 4,5 | 3,4  | 3,3               | A0101001.0040        | A0101051.0040       | A0208900.0040     |
|                        | 4,5     | 0,75           | 50             | 13             | 24               | 6   | 4,9  | 3,7               |                      |                     |                   |
|                        | 5       | 0,8            | 50             | 14             | 25               | 6   | 4,9  | 4,2               | A0101001.0050        | A0101051.0050       | A0208900.0050     |
|                        | 6       | 1              | 56             | 16             | 28               | 6   | 4,9  | 5                 | A0101001.0060        | A0101051.0060       | A0208900.0060     |
|                        | 7       | 1              | 56             | 18             | —                | 6   | 4,9  | 6                 |                      |                     |                   |
|                        | 8       | 1,25           | 63             | 20             | —                | 6   | 4,9  | 6,8               | A0101001.0080        | A0101051.0080       | A0208900.0080     |
|                        | 9       | 1,25           | 63             | 20             | —                | 7   | 5,5  | 7,8               |                      |                     |                   |
|                        | 10      | 1,5            | 70             | 22             | —                | 7   | 5,5  | 8,5               | A0101001.0100        | A0101051.0100       | A0208900.0100     |
|                        | 11      | 1,5            | 70             | 22             | —                | 8   | 6,2  | 9,5               |                      |                     |                   |
|                        | 12      | 1,75           | 75             | 24             | —                | 9   | 7    | 10,2              | A0101001.0112        | A0101051.0112       | A0208900.0112     |
|                        | 14      | 2              | 80             | 26             | —                | 11  | 9    | 12                | A0101001.0114        | A0101051.0114       |                   |
|                        | 16      | 2              | 80             | 27             | —                | 12  | 9    | 14                | A0101001.0116        | A0101051.0116       |                   |
|                        | 18      | 2,5            | 95             | 30             | —                | 14  | 11   | 15,5              | A0101001.0118        | A0101051.0118       |                   |
|                        | 20      | 2,5            | 95             | 32             | —                | 16  | 12   | 17,5              | A0101001.0120        | A0101051.0120       |                   |
|                        | 22      | 2,5            | 100            | 32             | —                | 18  | 14,5 | 19,5              | A0101001.0122        |                     |                   |
|                        | 24      | 3              | 110            | 34             | —                | 18  | 14,5 | 21                | A0101001.0124        | A0101051.0124       |                   |
|                        | 27      | 3              | 110            | 36             | —                | 20  | 16   | 24                | A0101001.0127        |                     |                   |
|                        | 30      | 3,5            | 125            | 40             | —                | 22  | 18   | 26,5              | A0101001.0130        |                     |                   |
| DIN 371                |         |                |                |                |                  |     |      | » 92              |                      | » 92                | » 94              |
| DIN 376                |         |                |                |                |                  |     |      | » 120             |                      | » 120               | » 122             |

\*) ≤ M1,4 Tol. 4H(X)/5H(X)

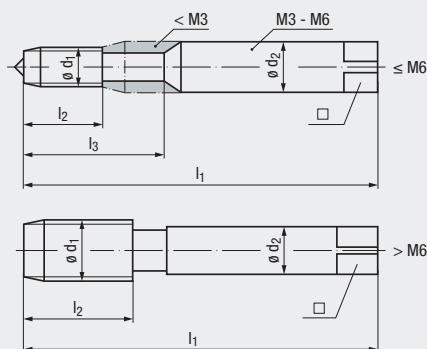
|                |                |   |    |             |             |                     |                   |          |    |                  |          |           |                |                        |
|----------------|----------------|---|----|-------------|-------------|---------------------|-------------------|----------|----|------------------|----------|-----------|----------------|------------------------|
| Product Finder | V <sub>c</sub> | M | MF | UNC<br>UN-3 | UNF<br>UNEF | G, Rp<br>NPSM, NPSF | NPT, NPT<br>Rc, W | BSW, BSF | Pg | MJ<br>UNJC, UNJF | EG (STI) | SELF-LOCK | Tr, Tr-F<br>Rd | Zubehör<br>Accessories |
|----------------|----------------|---|----|-------------|-------------|---------------------|-------------------|----------|----|------------------|----------|-----------|----------------|------------------------|



|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



DIN 13



DIN  
352



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



HSSE

HSSE

6HX \*)

6HX \*)

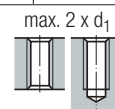
A / 5-6  
O / P

D / 3-4  
O / P

C / 2-3  
O / P

C / 2-3  
O / P

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material



P 1.1-3.1

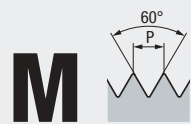
P 1.1-3.1

P 1.1-3.1

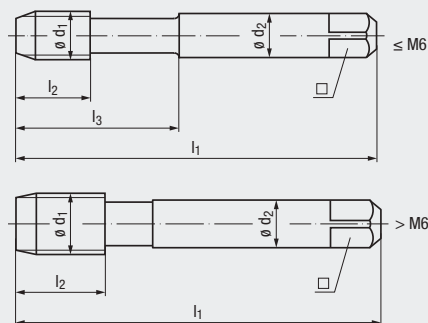
P 1.1-3.1

|   | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □    |  | HGB-Set<br>V-Nr.1 | HGB-Set<br>M-Nr.2 | HGB-Set<br>F  | HGB-Set-3S<br>(Nr.1, Nr.2, F) |
|---|------------------------|---------|----------------|----------------|----------------|------------------|------|-------------------------------------------------------------------------------------|-------------------|-------------------|---------------|-------------------------------|
| M | 1                      | 0,25    | 32             | 5              | —              | 2,5              | 2,1  | 0,75                                                                                | H0111019.0010     | H0111029.0010     | H0111001.0010 | H0101001.0010                 |
|   | 1,1                    | 0,25    | 32             | 5              | —              | 2,5              | 2,1  | 0,85                                                                                |                   |                   |               |                               |
|   | 1,2                    | 0,25    | 32             | 5              | —              | 2,5              | 2,1  | 0,95                                                                                |                   |                   |               |                               |
|   | 1,4                    | 0,3     | 32             | 7              | —              | 2,5              | 2,1  | 1,1                                                                                 | H0111019.0014     | H0111029.0014     | H0111001.0014 | H0101001.0014                 |
|   | 1,6                    | 0,35    | 32             | 8              | —              | 2,5              | 2,1  | 1,25                                                                                | H0111019.0016     | H0111029.0016     | H0111001.0016 | H0101001.0016                 |
|   | 1,7                    | 0,35    | 32             | 8              | —              | 2,5              | 2,1  | 1,35                                                                                |                   |                   |               |                               |
|   | 1,8                    | 0,35    | 32             | 8              | —              | 2,5              | 2,1  | 1,45                                                                                |                   |                   |               |                               |
|   | 2                      | 0,4     | 36             | 8              | —              | 2,8              | 2,1  | 1,6                                                                                 | H0111019.0020     | H0111029.0020     | H0111001.0020 | H0101001.0020                 |
|   | 2,2                    | 0,45    | 36             | 9              | —              | 2,8              | 2,1  | 1,75                                                                                |                   |                   |               |                               |
|   | 2,3                    | 0,4     | 36             | 9              | —              | 2,8              | 2,1  | 1,9                                                                                 |                   |                   |               |                               |
|   | 2,5                    | 0,45    | 40             | 9              | —              | 2,8              | 2,1  | 2,05                                                                                | H0111019.0025     | H0111029.0025     | H0111001.0025 | H0101001.0025                 |
|   | 2,6                    | 0,45    | 40             | 9              | —              | 2,8              | 2,1  | 2,15                                                                                |                   |                   |               |                               |
|   | 3                      | 0,5     | 40             | 10             | 18             | 3,5              | 2,7  | 2,5                                                                                 | H0111019.0030     | H0111029.0030     | H0111001.0030 | H0101001.0030                 |
|   | 3,5                    | 0,6     | 45             | 11             | 20             | 4                | 3    | 2,9                                                                                 | H0111019.0035     | H0111029.0035     | H0111001.0035 | H0101001.0035                 |
|   | 4                      | 0,7     | 45             | 12             | 22             | 4,5              | 3,4  | 3,3                                                                                 | H0111019.0040     | H0111029.0040     | H0111001.0040 | H0101001.0040                 |
|   | 4,5                    | 0,75    | 50             | 13             | 24             | 6                | 4,9  | 3,7                                                                                 |                   |                   |               |                               |
|   | 5                      | 0,8     | 50             | 14             | 25             | 6                | 4,9  | 4,2                                                                                 | H0111019.0050     | H0111029.0050     | H0111001.0050 | H0101001.0050                 |
|   | 6                      | 1       | 56             | 16             | 28             | 6                | 4,9  | 5                                                                                   | H0111019.0060     | H0111029.0060     | H0111001.0060 | H0101001.0060                 |
|   | 7                      | 1       | 56             | 18             | —              | 6                | 4,9  | 6                                                                                   | H0111019.0070     | H0111029.0070     | H0111001.0070 | H0101001.0070                 |
|   | 8                      | 1,25    | 63             | 20             | —              | 6                | 4,9  | 6,8                                                                                 | H0111019.0080     | H0111029.0080     | H0111001.0080 | H0101001.0080                 |
|   | 9                      | 1,25    | 63             | 20             | —              | 7                | 5,5  | 7,8                                                                                 |                   |                   |               |                               |
|   | 10                     | 1,5     | 70             | 22             | —              | 7                | 5,5  | 8,5                                                                                 | H0111019.0100     | H0111029.0100     | H0111001.0100 | H0101001.0100                 |
|   | 11                     | 1,5     | 70             | 22             | —              | 8                | 6,2  | 9,5                                                                                 | H0111019.0111     | H0111029.0111     | H0111001.0111 | H0101001.0111                 |
|   | 12                     | 1,75    | 75             | 24             | —              | 9                | 7    | 10,2                                                                                | H0111019.0112     | H0111029.0112     | H0111001.0112 | H0101001.0112                 |
|   | 14                     | 2       | 80             | 26             | —              | 11               | 9    | 12                                                                                  | H0111019.0114     | H0111029.0114     | H0111001.0114 | H0101001.0114                 |
|   | 16                     | 2       | 80             | 27             | —              | 12               | 9    | 14                                                                                  | H0111019.0116     | H0111029.0116     | H0111001.0116 | H0101001.0116                 |
|   | 18                     | 2,5     | 95             | 30             | —              | 14               | 11   | 15,5                                                                                |                   |                   |               |                               |
|   | 20                     | 2,5     | 95             | 32             | —              | 16               | 12   | 17,5                                                                                | H0111019.0120     | H0111029.0120     | H0111001.0120 | H0101001.0120                 |
|   | 22                     | 2,5     | 100            | 32             | —              | 18               | 14,5 | 19,5                                                                                |                   |                   |               |                               |
|   | 24                     | 3       | 110            | 34             | —              | 18               | 14,5 | 21                                                                                  | H0111019.0124     | H0111029.0124     | H0111001.0124 | H0101001.0124                 |
|   | 27                     | 3       | 110            | 36             | —              | 20               | 16   | 24                                                                                  | H0111019.0127     | H0111029.0127     | H0111001.0127 | H0101001.0127                 |
|   | 30                     | 3,5     | 125            | 40             | —              | 22               | 18   | 26,5                                                                                | H0111019.0130     | H0111029.0130     | H0111001.0130 | H0101001.0130                 |
|   | 33                     | 3,5     | 125            | 40             | —              | 25               | 20   | 29,5                                                                                | H0111019.0133     | H0111029.0133     | H0111001.0133 | H0101001.0133                 |
|   | 36                     | 4       | 150            | 50             | —              | 28               | 22   | 32                                                                                  | H0111019.0136     | H0111029.0136     | H0111001.0136 | H0101001.0136                 |

\*) ≤ M1,4 Tol. 4HX/5HX



DIN 13

≈ DIN  
352Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

» 78



VHM/KHM

C / ≈3  
O / P

VHM/KHM

C / ≈3  
O / P

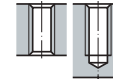
6HX

VHM/KHM

C / ≈3  
O / P

6HX

VHM/KHM

C / ≈3  
O / Pmax. 2 x d<sub>1</sub>

P 5.1  
N 2.8, 5.2  
H 1.1-1.3

P 5.1  
N 2.8, 5.2  
H 1.1-1.3

P 5.1  
N 2.8, 5.2  
H 1.1-1.3

P 5.1  
N 2.8, 5.2  
H 1.1-1.3

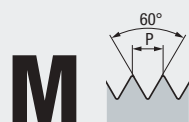
|                        |         |                |                |                        |                  |     |     |  | VHM/KHM-Set<br>V-Nr.1 | VHM/KHM-Set<br>M-Nr.2 | VHM/KHM-Set<br>F | VHM/KHM-Set-3S<br>(Nr.1, Nr.2, F) |
|------------------------|---------|----------------|----------------|------------------------|------------------|-----|-----|-------------------------------------------------------------------------------------|-----------------------|-----------------------|------------------|-----------------------------------|
| ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | max.<br>l <sub>3</sub> | ø d <sub>2</sub> | □   |     |                                                                                     |                       |                       |                  |                                   |
| M                      | 3       | 0,5            | 40             | 6                      | 18               | 3,5 | 2,7 | 2,5                                                                                 | H0310919.0030         | H0310929.0030         | H0310901.0030    | H0300901.0030                     |
|                        | 4       | 0,7            | 45             | 7                      | 19               | 4,5 | 3,4 | 3,3                                                                                 | H0310919.0040         | H0310929.0040         | H0310901.0040    | H0300901.0040                     |
|                        | 5       | 0,8            | 50             | 9                      | 25               | 6   | 4,9 | 4,2                                                                                 | H0310919.0050         | H0310929.0050         | H0310901.0050    | H0300901.0050                     |
|                        | 6       | 1              | 56             | 10                     | 26               | 6   | 4,9 | 5                                                                                   | H0310919.0060         | H0310929.0060         | H0310901.0060    | H0300901.0060                     |
|                        | 8       | 1,25           | 63             | 14                     | —                | 6   | 4,9 | 6,8                                                                                 | H0310919.0080         | H0310929.0080         | H0310901.0080    | H0300901.0080                     |
|                        | 10      | 1,5            | 70             | 16                     | —                | 7   | 5,5 | 8,5                                                                                 | H0310919.0100         | H0310929.0100         | H0310901.0100    | H0300901.0100                     |
|                        | 12      | 1,75           | 75             | 18                     | —                | 9   | 7   | 10,2                                                                                | H0310919.0112         | H0310929.0112         | H0310901.0112    | H0300901.0112                     |
|                        | 14      | 2              | 80             | 20                     | —                | 11  | 9   | 12                                                                                  | H0310919.0114         | H0310929.0114         | H0310901.0114    | H0300901.0114                     |
|                        | 16      | 2              | 80             | 22                     | —                | 12  | 9   | 14                                                                                  | H0310919.0116         | H0310929.0116         | H0310901.0116    | H0300901.0116                     |
|                        | 20      | 2,5            | 95             | 25                     | —                | 16  | 12  | 17,5                                                                                | H0310919.0120         | H0310929.0120         | H0310901.0120    | H0300901.0120                     |



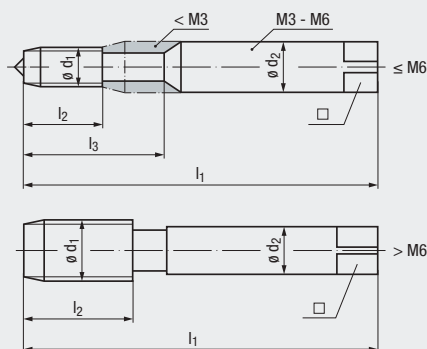
Kühlschmierstoffe siehe Seite 300 - 301

Coolant-lubricants, see page 300 - 301

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



DIN 13



DIN  
352



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



HSSE

C / 2-3  
O / P

HSSE

C / 2-3  
O / P

HSSE

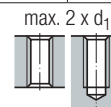
C / 2-3  
O / P

6HX

HSSE

C / 2-3  
O / P

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material



78

|                |                |                |                |
|----------------|----------------|----------------|----------------|
| P 1.1-5.1      | P 1.1-5.1      | P 1.1-5.1      | P 1.1-5.1      |
| M 1.1-4.1      | M 1.1-4.1      | M 1.1-4.1      | M 1.1-4.1      |
| K 1.1-4.2      | K 1.1-4.2      | K 1.1-4.2      | K 1.1-4.2      |
| N 1.1-2.6      | N 1.1-2.6      | N 1.1-2.6      | N 1.1-2.6      |
| S 2.1-2.2, 2.4 | S 2.1-2.2, 2.4 | S 2.1-2.2, 2.4 | S 2.1-2.2, 2.4 |

|          | Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □    |      | WM-Set<br>V-Nr.1Z | WM-Set<br>V-Nr.1 | WM-Set<br>M-Nr.2 | WM-Set<br>F   |
|----------|------------------------|---------|----------------|----------------|----------------|------------------|------|------|-------------------|------------------|------------------|---------------|
| <b>M</b> | 2                      | 0,4     | 36             | 8              | —              | 2,8              | 2,1  | 1,6  | H0413019.0020     | H0423019.0020    | H0423029.0020    | H0423001.0020 |
|          | 2,2                    | 0,45    | 36             | 9              | —              | 2,8              | 2,1  | 1,75 |                   |                  |                  |               |
|          | 2,3                    | 0,4     | 36             | 9              | —              | 2,8              | 2,1  | 1,9  |                   |                  |                  |               |
|          | 2,5                    | 0,45    | 40             | 9              | —              | 2,8              | 2,1  | 2,05 | H0413019.0025     | H0423019.0025    | H0423029.0025    | H0423001.0025 |
|          | 2,6                    | 0,45    | 40             | 9              | —              | 2,8              | 2,1  | 2,15 |                   |                  |                  |               |
|          | 3                      | 0,5     | 40             | 10             | 18             | 3,5              | 2,7  | 2,5  | H0413019.0030     | H0423019.0030    | H0423029.0030    | H0423001.0030 |
|          | 3,5                    | 0,6     | 45             | 11             | 20             | 4                | 3    | 2,9  | H0413019.0035     | H0423019.0035    | H0423029.0035    | H0423001.0035 |
|          | 4                      | 0,7     | 45             | 12             | 22             | 4,5              | 3,4  | 3,3  | H0413019.0040     | H0423019.0040    | H0423029.0040    | H0423001.0040 |
|          | 5                      | 0,8     | 50             | 14             | 25             | 6                | 4,9  | 4,2  | H0413019.0050     | H0423019.0050    | H0423029.0050    | H0423001.0050 |
|          | 6                      | 1       | 56             | 16             | 28             | 6                | 4,9  | 5    | H0413019.0060     | H0423019.0060    | H0423029.0060    | H0423001.0060 |
|          | 8                      | 1,25    | 63             | 20             | —              | 6                | 4,9  | 6,8  | H0413019.0080     | H0423019.0080    | H0423029.0080    | H0423001.0080 |
|          | 10                     | 1,5     | 70             | 22             | —              | 7                | 5,5  | 8,5  | H0413019.0100     | H0423019.0100    | H0423029.0100    | H0423001.0100 |
|          | 12                     | 1,75    | 75             | 24             | —              | 9                | 7    | 10,2 | H0413019.0112     | H0423019.0112    | H0423029.0112    | H0423001.0112 |
|          | 14                     | 2       | 80             | 26             | —              | 11               | 9    | 12   | H0413019.0114     | H0423019.0114    | H0423029.0114    | H0423001.0114 |
|          | 16                     | 2       | 80             | 27             | —              | 12               | 9    | 14   | H0413019.0116     | H0423019.0116    | H0423029.0116    | H0423001.0116 |
|          | 18                     | 2,5     | 95             | 30             | —              | 14               | 11   | 15,5 |                   |                  |                  |               |
|          | 20                     | 2,5     | 95             | 32             | —              | 16               | 12   | 17,5 | H0413019.0120     | H0423019.0120    | H0423029.0120    | H0423001.0120 |
|          | 22                     | 2,5     | 100            | 32             | —              | 18               | 14,5 | 19,5 |                   |                  |                  |               |
|          | 24                     | 3       | 110            | 34             | —              | 18               | 14,5 | 21   | H0413019.0124     | H0423019.0124    | H0423029.0124    | H0423001.0124 |
|          | 27                     | 3       | 110            | 36             | —              | 20               | 16   | 24   |                   |                  |                  |               |
|          | 30                     | 3,5     | 125            | 40             | —              | 22               | 18   | 26,5 |                   |                  |                  |               |

1) Der Vorschneider Nr.1Z mit Führungszapfen ist eine zusätzliche Hilfe zum winkelrechten Anschneiden von Hand.  
Er kann z.B. auf der Maschine weggelassen werden. Die Profilabstufung von Nr.1Z und Nr.1 ist gleich.  
The taper tap No. 1Z with cylindrical pilot is an additional aid for true alignment especially when tapping by hand.  
It can be deleted when tapping by machine. The profile graduation of No.1Z, and No.1 is the same.

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

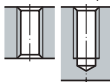
EG (STI)

SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

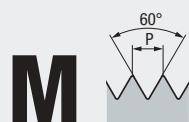
|                                                                                         |                                                                                   |                                                                                         |                                                                                     |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|         |   |         |   |
| <br>2) |  | <br>2) |  |
| 6HX                                                                                     | 6HX                                                                               | 6HX                                                                                     | 6HX                                                                                 |
| HSSE                                                                                    | HSSE                                                                              | HSSE                                                                                    | HSSE                                                                                |
| C / 2-3                                                                                 | C / 2-3                                                                           | C / 2-3                                                                                 | C / 2-3                                                                             |
| O / P                                                                                   | O / P                                                                             | O / P                                                                                   | O / P                                                                               |

max. 2 x d<sub>1</sub>

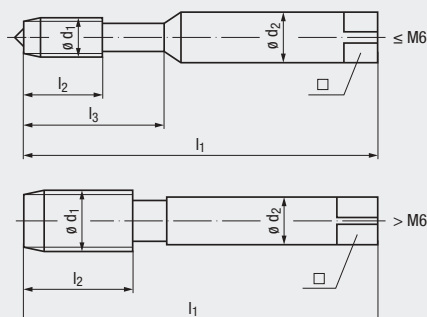


|                                                                                                                                                                                                                        |                                                                                                                                                                                                                        |                                                                                                                                                                                                                        |                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div><div>P</div><div>1.1-5.1</div></div> <div><div>M</div><div>1.1-4.1</div></div> <div><div>K</div><div>1.1-4.2</div></div> <div><div>N</div><div>1.1-2.6</div></div> <div><div>S</div><div>2.1-2.2, 2.4</div></div> | <div><div>P</div><div>1.1-5.1</div></div> <div><div>M</div><div>1.1-4.1</div></div> <div><div>K</div><div>1.1-4.2</div></div> <div><div>N</div><div>1.1-2.6</div></div> <div><div>S</div><div>2.1-2.2, 2.4</div></div> | <div><div>P</div><div>1.1-5.1</div></div> <div><div>M</div><div>1.1-4.1</div></div> <div><div>K</div><div>1.1-4.2</div></div> <div><div>N</div><div>1.1-2.6</div></div> <div><div>S</div><div>2.1-2.2, 2.4</div></div> | <div><div>P</div><div>1.1-5.1</div></div> <div><div>M</div><div>1.1-4.1</div></div> <div><div>K</div><div>1.1-4.2</div></div> <div><div>N</div><div>1.1-2.6</div></div> <div><div>S</div><div>2.1-2.2, 2.4</div></div> |
| WM-Set-3S<br>(Nr.1Z, Nr.1, F)                                                                                                                                                                                          | WM-Set-2S<br>(Nr.1, F)                                                                                                                                                                                                 | WM-Set-4S<br>(Nr.1Z, Nr.1, Nr.2, F)                                                                                                                                                                                    | WM-Set-3S<br>(Nr.1, Nr.2, F)                                                                                                                                                                                           |
| H0453001.0020                                                                                                                                                                                                          | H0483001.0020                                                                                                                                                                                                          | H0403001.0020                                                                                                                                                                                                          | H0433001.0020                                                                                                                                                                                                          |
| H0453001.0025                                                                                                                                                                                                          | H0483001.0025                                                                                                                                                                                                          | H0403001.0025                                                                                                                                                                                                          | H0433001.0025                                                                                                                                                                                                          |
| H0453001.0030                                                                                                                                                                                                          | H0483001.0030                                                                                                                                                                                                          | H0403001.0030                                                                                                                                                                                                          | H0433001.0030                                                                                                                                                                                                          |
| H0453001.0035                                                                                                                                                                                                          | H0483001.0035                                                                                                                                                                                                          | H0403001.0035                                                                                                                                                                                                          | H0433001.0035                                                                                                                                                                                                          |
| H0453001.0040                                                                                                                                                                                                          | H0483001.0040                                                                                                                                                                                                          | H0403001.0040                                                                                                                                                                                                          | H0433001.0040                                                                                                                                                                                                          |
| H0453001.0050                                                                                                                                                                                                          | H0483001.0050                                                                                                                                                                                                          | H0403001.0050                                                                                                                                                                                                          | H0433001.0050                                                                                                                                                                                                          |
| H0453001.0060                                                                                                                                                                                                          | H0483001.0060                                                                                                                                                                                                          | H0403001.0060                                                                                                                                                                                                          | H0433001.0060                                                                                                                                                                                                          |
| H0453001.0080                                                                                                                                                                                                          | H0483001.0080                                                                                                                                                                                                          | H0403001.0080                                                                                                                                                                                                          | H0433001.0080                                                                                                                                                                                                          |
| H0453001.0100                                                                                                                                                                                                          | H0483001.0100                                                                                                                                                                                                          | H0403001.0100                                                                                                                                                                                                          | H0433001.0100                                                                                                                                                                                                          |
| H0453001.0112                                                                                                                                                                                                          | H0483001.0112                                                                                                                                                                                                          | H0403001.0112                                                                                                                                                                                                          | H0433001.0112                                                                                                                                                                                                          |
| H0453001.0114                                                                                                                                                                                                          | H0483001.0114                                                                                                                                                                                                          | H0403001.0114                                                                                                                                                                                                          | H0433001.0114                                                                                                                                                                                                          |
| H0453001.0116                                                                                                                                                                                                          | H0483001.0116                                                                                                                                                                                                          | H0403001.0116                                                                                                                                                                                                          | H0433001.0116                                                                                                                                                                                                          |
| H0453001.0120                                                                                                                                                                                                          | H0483001.0120                                                                                                                                                                                                          | H0403001.0120                                                                                                                                                                                                          | H0433001.0120                                                                                                                                                                                                          |
| H0453001.0124                                                                                                                                                                                                          | H0483001.0124                                                                                                                                                                                                          | H0403001.0124                                                                                                                                                                                                          | H0433001.0124                                                                                                                                                                                                          |

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



DIN 13



DIN  
352



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



TIN

HSSE

C / 2-3

O / P

TIN

HSSE

C / 2-3

O / P

TIN

HSSE

C / 2-3

O / P

6HX

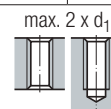
TIN

HSSE

C / 2-3

O / P

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 78

P

1.1-5.1

M

1.1-4.1

K

1.1-4.2

N

1.1-2.7

S

2.1-2.6

P

1.1-5.1

M

1.1-4.1

K

1.1-4.2

N

1.1-2.7

S

2.1-2.6

P

1.1-5.1

M

1.1-4.1

K

1.1-4.2

N

1.1-2.7

S

2.1-2.6

P

1.1-5.1

M

1.1-4.1

K

1.1-4.2

N

1.1-2.7

S

2.1-2.6

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |      | WM-Set<br>V-Nr.1Z<br>TIN | WM-Set<br>V-Nr.1<br>TIN | WM-Set<br>M-Nr.2<br>TIN | WM-Set<br>F<br>TIN |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|--------------------------|-------------------------|-------------------------|--------------------|
| <b>M</b> 3             | 0,5     | 40             | 10             | 18             | 3,5              | 2,7 | 2,5  | H0413119.0030            | H0423119.0030           | H0423129.0030           | H0423101.0030      |
| 4                      | 0,7     | 45             | 12             | 22             | 4,5              | 3,4 | 3,3  | H0413119.0040            | H0423119.0040           | H0423129.0040           | H0423101.0040      |
| 5                      | 0,8     | 50             | 14             | 25             | 6                | 4,9 | 4,2  | H0413119.0050            | H0423119.0050           | H0423129.0050           | H0423101.0050      |
| 6                      | 1       | 56             | 16             | 28             | 6                | 4,9 | 5    | H0413119.0060            | H0423119.0060           | H0423129.0060           | H0423101.0060      |
| 8                      | 1,25    | 63             | 20             | —              | 6                | 4,9 | 6,8  | H0413119.0080            | H0423119.0080           | H0423129.0080           | H0423101.0080      |
| 10                     | 1,5     | 70             | 22             | —              | 7                | 5,5 | 8,5  | H0413119.0100            | H0423119.0100           | H0423129.0100           | H0423101.0100      |
| 12                     | 1,75    | 75             | 24             | —              | 9                | 7   | 10,2 | H0413119.0112            | H0423119.0112           | H0423129.0112           | H0423101.0112      |
| 14                     | 2       | 80             | 26             | —              | 11               | 9   | 12   |                          |                         |                         |                    |
| 16                     | 2       | 80             | 27             | —              | 12               | 9   | 14   | H0413119.0116            | H0423119.0116           | H0423129.0116           | H0423101.0116      |

1) Der Vorschneider Nr.1Z mit Führungszapfen ist eine zusätzliche Hilfe zum winkelrechten Anschneiden von Hand.  
Er kann z.B. auf der Maschine weggelassen werden. Die Profilabstufung von Nr.1Z und Nr.1 ist gleich.  
The taper tap No. 1Z with cylindrical pilot is an additional aid for true alignment especially when tapping by hand.  
It can be deleted when tapping by machine. The profile graduation of No.1Z, and No.1 is the same.





2)



2)



6HX

TIN

HSSE

C / 2-3

O / P

6HX

TIN

HSSE

C / 2-3

O / P

6HX

TIN

HSSE

C / 2-3

O / P

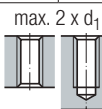
6HX

TIN

HSSE

C / 2-3

O / P

**P** 1.1-5.1**M** 1.1-4.1**K** 1.1-4.2**N** 1.1-2.7**S** 2.1-2.6**P** 1.1-5.1**M** 1.1-4.1**K** 1.1-4.2**N** 1.1-2.7**S** 2.1-2.6**P** 1.1-5.1**M** 1.1-4.1**K** 1.1-4.2**N** 1.1-2.7**S** 2.1-2.6**P** 1.1-5.1**M** 1.1-4.1**K** 1.1-4.2**N** 1.1-2.7**S** 2.1-2.6**WM-Set-3S**  
TIN  
(Nr.1Z, Nr.1, F)

H0453101.0030

H0453101.0040

H0453101.0050

H0453101.0060

H0453101.0080

H0453101.0100

H0453101.0112

H0453101.0116

**WM-Set-2S**  
TIN  
(Nr.1, F)

H0483101.0030

H0483101.0040

H0483101.0050

H0483101.0060

H0483101.0080

H0483101.0100

H0483101.0112

H0483101.0116

**WM-Set-4S**  
TIN  
(Nr.1Z, Nr.1, Nr.2, F)

H0403101.0030

H0403101.0040

H0403101.0050

H0403101.0060

H0403101.0080

H0403101.0100

H0403101.0112

H0403101.0116

**WM-Set-3S**  
TIN  
(Nr.1, Nr.2, F)

H0433101.0030

H0433101.0040

H0433101.0050

H0433101.0060

H0433101.0080

H0433101.0100

H0433101.0112

H0433101.0116

**M** 3

4

5

6

8

10

12

14

16

2) Beim Gewindebohren von Hand in Durchgangslöcher entfällt Nr.1  
No.1 is not needed when tapping in through holes by hand

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

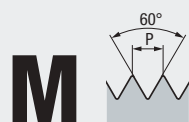
Accessories



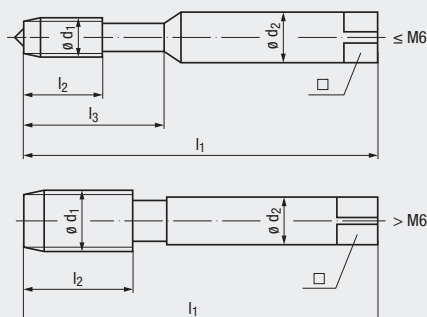
Verstellbare Windeisen siehe Seite 305

Adjustable tap wrenches, see page 305

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



DIN 13



DIN  
352



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



NT

HSSE

C / 2-3

O / P

NT

HSSE

C / 2-3

O / P

NT

HSSE

C / 2-3

O / P

6HX

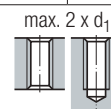
NT

HSSE

C / 2-3

O / P

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 78

P 3.1-5.1  
N 2.7  
S 2.3, 2.5-2.6

P 3.1-5.1  
N 2.7  
S 2.3, 2.5-2.6

P 3.1-5.1  
N 2.7  
S 2.3, 2.5-2.6

P 3.1-5.1  
N 2.7  
S 2.3, 2.5-2.6

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |      | WM-F-TIC-Set<br>V-Nr.1Z<br>NT | WM-F-TIC-Set<br>V-Nr.1<br>NT | WM-F-TIC-Set<br>M-Nr.2<br>NT | WM-F-TIC-Set<br>F<br>NT |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|-------------------------------|------------------------------|------------------------------|-------------------------|
| <b>M</b>               |         |                |                |                |                  |     |      |                               |                              |                              |                         |
| 3                      | 0,5     | 40             | 10             | 18             | 3,5              | 2,7 | 2,5  | H0417119.0030                 | H0427119.0030                | H0427129.0030                | H0427101.0030           |
| 4                      | 0,7     | 45             | 12             | 22             | 4,5              | 3,4 | 3,3  | H0417119.0040                 | H0427119.0040                | H0427129.0040                | H0427101.0040           |
| 5                      | 0,8     | 50             | 14             | 25             | 6                | 4,9 | 4,2  | H0417119.0050                 | H0427119.0050                | H0427129.0050                | H0427101.0050           |
| 6                      | 1       | 56             | 16             | 28             | 6                | 4,9 | 5    | H0417119.0060                 | H0427119.0060                | H0427129.0060                | H0427101.0060           |
| 8                      | 1,25    | 63             | 20             | —              | 6                | 4,9 | 6,8  | H0417119.0080                 | H0427119.0080                | H0427129.0080                | H0427101.0080           |
| 10                     | 1,5     | 70             | 22             | —              | 7                | 5,5 | 8,5  | H0417119.0100                 | H0427119.0100                | H0427129.0100                | H0427101.0100           |
| 12                     | 1,75    | 75             | 24             | —              | 9                | 7   | 10,2 | H0417119.0112                 | H0427119.0112                | H0427129.0112                | H0427101.0112           |
| 16                     | 2       | 80             | 27             | —              | 12               | 9   | 14   | H0417119.0116                 | H0427119.0116                | H0427129.0116                | H0427101.0116           |
| 20                     | 2,5     | 95             | 32             | —              | 16               | 12  | 17,5 | H0417119.0120                 | H0427119.0120                | H0427129.0120                | H0427101.0120           |

1) Der Vorschneider Nr.1Z mit Führungszapfen ist eine zusätzliche Hilfe zum winkelrechten Anschneiden von Hand.  
Er kann z.B. auf der Maschine weggelassen werden. Die Profilabstufung von Nr.1Z und Nr.1 ist gleich.  
The taper tap No. 1Z with cylindrical pilot is an additional aid for true alignment especially when tapping by hand.  
It can be deleted when tapping by machine. The profile graduation of No.1Z, and No.1 is the same.



2)



6HX

NT

HSSE

C / 2-3

O / P

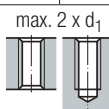
6HX

NT

HSSE

C / 2-3

O / P

**P** 3.1-5.1**N** 2.7**S** 2.3, 2.5-2.6**P** 3.1-5.1**N** 2.7**S** 2.3, 2.5-2.6**WM-F-TIC-Set-4S**  
NT  
(Nr.1Z, Nr.1, Nr.2, F)**WM-F-TIC-Set-3S**  
NT  
(Nr.1, Nr.2, F)

H0407101.0030

H0407101.0040

H0407101.0050

H0407101.0060

H0407101.0080

H0407101.0100

H0407101.0112

H0407101.0116

H0407101.0120

H0437101.0030

H0437101.0040

H0437101.0050

H0437101.0060

H0437101.0080

H0437101.0100

H0437101.0112

H0437101.0116

H0437101.0120

**M** 3

4

5

6

8

10

12

16

20

2) Beim Gewindebohren von Hand in Durchgangslöcher entfällt Nr.1  
No.1 is not needed when tapping in through holes by hand

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

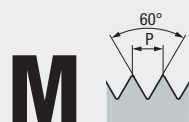
UNJC, UNJF

EG (STI)

SELF-LOCK

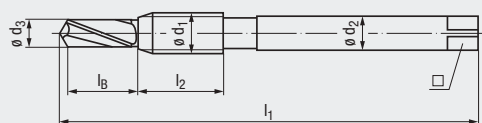
Tr, Tr-F  
RdZubehör  
Accessories

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



DIN 13

Normal lang und extra lang  
Standard length and extra long



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



ISO 2/6H

HSSE

C / 2-3

E / 0

ISO 2/6H

HSSE

C / 2-3

E / 0

Gewindetiefe und Lochform  
Thread depth and hole type

max. 1 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

» 78

P 2.1  
N 2.2

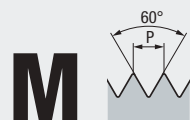
P 2.1  
N 2.2

### Normal lang · Standard length

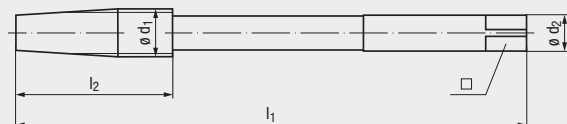
| ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>B</sub> | ø d <sub>2</sub> | □   | ø d <sub>3</sub> | KOMBI<br>Normal-Ig |  |  |  |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|------------------|--------------------|--|--|--|
| <b>M</b> 3             | 0,5     | 62             | 11             | 8,2            | 3,5              | 2,7 | 2,55             | M0601000.0030      |  |  |  |
| 3,5                    | 0,6     | 66             | 12             | 9,1            | 4                | 3   | 2,95             |                    |  |  |  |
| 4                      | 0,7     | 66             | 13             | 9              | 4,5              | 3,4 | 3,36             | M0601000.0040      |  |  |  |
| 5                      | 0,8     | 75             | 15             | 10,7           | 6                | 4,9 | 4,26             | M0601000.0050      |  |  |  |
| 6                      | 1       | 81             | 20             | 12,5           | 6                | 4,9 | 5,05             | M0601000.0060      |  |  |  |
| 8                      | 1,25    | 93             | 12             | 17,9           | 6                | 4,9 | 6,8              | M0601000.0080      |  |  |  |
| 10                     | 1,5     | 99             | 14             | 19,4           | 7                | 5,5 | 8,55             | M0601000.0100      |  |  |  |
| 12                     | 1,75    | 106            | 16             | 21,8           | 9                | 7   | 10,3             | M0601000.0112      |  |  |  |
| 14                     | 2       | 114            | 18             | 24,3           | 11               | 9   | 12,1             |                    |  |  |  |
| 16                     | 2       | 123            | 20             | 27,7           | 12               | 9   | 14,1             | M0601000.0116      |  |  |  |
| 18                     | 2,5     | 132            | 22             | 31,2           | 14               | 11  | 15,6             |                    |  |  |  |
| 20                     | 2,5     | 132            | 22             | 30,6           | 16               | 12  | 17,6             | M0601000.0120      |  |  |  |

### Extra lang · Extra long

| ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>B</sub> | ø d <sub>2</sub> | □   | ø d <sub>3</sub> | KOMBI<br>Extra-Ig |               |  |  |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|------------------|-------------------|---------------|--|--|
| <b>M</b> 3             | 0,5     | 71             | 11             | 17,2           | 3,5              | 2,7 | 2,55             |                   | M0621000.0030 |  |  |
| 4                      | 0,7     | 77             | 13             | 20             | 4,5              | 3,4 | 3,36             |                   | M0621000.0040 |  |  |
| 5                      | 0,8     | 87             | 13,7           | 24             | 6                | 4,9 | 4,26             |                   | M0621000.0050 |  |  |
| 6                      | 1       | 94             | 20             | 25,5           | 6                | 4,9 | 5,05             |                   | M0621000.0060 |  |  |
| 8                      | 1,25    | 109            | 12             | 33,9           | 6                | 4,9 | 6,8              |                   | M0621000.0080 |  |  |
| 10                     | 1,5     | 118            | 14             | 38,4           | 7                | 5,5 | 8,55             |                   | M0621000.0100 |  |  |
| 12                     | 1,75    | 127            | 16             | 42,8           | 9                | 7   | 10,3             |                   | M0621000.0112 |  |  |



DIN 13



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78



Haben Sie Bedarf an Automaten-Mutter-Gewindebohrern?  
Bitte sprechen Sie uns an!  
Do you need taper taps?  
Please contact us!

ISO 2/6H

HSSE

E / O

max. 1,5 x d<sub>1</sub>


P 1.1-3.1

N 2.2

**MMB  
DIN 357**

|          | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |      |               |  |  |
|----------|------------------------|---------|----------------|----------------|------------------|------|------|---------------|--|--|
| <b>M</b> | 3                      | 0,5     | 70             | 16             | 2,2              | –    | 2,5  | M0101000.0030 |  |  |
|          | 4                      | 0,7     | 90             | 22             | 2,8              | 2,1  | 3,3  | M0101000.0040 |  |  |
|          | 5                      | 0,8     | 100            | 24             | 3,5              | 2,7  | 4,2  | M0101000.0050 |  |  |
|          | 6                      | 1       | 110            | 30             | 4,5              | 3,4  | 5    | M0101000.0060 |  |  |
|          | 7                      | 1       | 110            | 30             | 5,5              | 4,3  | 6    | M0101000.0070 |  |  |
|          | 8                      | 1,25    | 125            | 38             | 6                | 4,9  | 6,8  | M0101000.0080 |  |  |
|          | 10                     | 1,5     | 140            | 45             | 7                | 5,5  | 8,5  | M0101000.0100 |  |  |
|          | 12                     | 1,75    | 180            | 50             | 9                | 7    | 10,2 | M0101000.0112 |  |  |
|          | 14                     | 2       | 200            | 56             | 11               | 9    | 12   |               |  |  |
|          | 16                     | 2       | 200            | 63             | 12               | 9    | 14   | M0101000.0116 |  |  |
|          | 18                     | 2,5     | 220            | 63             | 14               | 11   | 15,5 |               |  |  |
|          | 20                     | 2,5     | 250            | 70             | 16               | 12   | 17,5 |               |  |  |
|          | 22                     | 2,5     | 280            | 80             | 18               | 14,5 | 19,5 |               |  |  |
|          | 24                     | 3       | 280            | 80             | 18               | 14,5 | 21   |               |  |  |
|          | 27                     | 3       | 315            | 90             | 20               | 16   | 24   |               |  |  |
|          | 30                     | 3,5     | 315            | 100            | 22               | 18   | 26,5 |               |  |  |

Product  
Finder

V<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

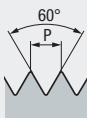
Accessories



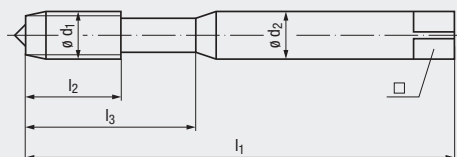
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MF

DIN 13



DIN  
371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



STEEL  
Steel  
materials



6HX

HSSE

C / 2-3

E / O



6HX

HSSE

LH

C / 2-3

E / O



ISO 2/6H

HSSE

B / 4-5

E / O



ISO 2/6H

TIN

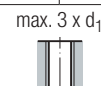
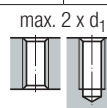
HSSE

B / 4-5

E / O

Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 78

|                  |                  |                  |                  |
|------------------|------------------|------------------|------------------|
| <b>K</b> 1.1-4.2 | <b>K</b> 1.1-4.2 | <b>P</b> 1.1-3.1 | <b>P</b> 1.1-4.1 |
| <b>N</b> 2.3     | <b>N</b> 2.3     | <b>N</b> 2.2     |                  |

|                                                                                              |     |         |                |                |                |                  |     |      | Rekord<br>1A-STEEL                                                                      | Rekord<br>1A-STEEL-LH                                                                   | Rekord<br>1B-STEEL-L                                                                    | Rekord<br>1B-STEEL-L<br>TIN |               |
|----------------------------------------------------------------------------------------------|-----|---------|----------------|----------------|----------------|------------------|-----|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------|---------------|
| ø d <sub>1</sub><br>mm                                                                       |     | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □   |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                             |               |
| M                                                                                            | 2,5 | x       | 0,35           | 50             | 7              | 12               | 2,8 | 2,1                                                                                     | 2,15                                                                                    | B0101001.0196                                                                           |                                                                                         |                             |               |
|                                                                                              | 2,6 | x       | 0,35           | 50             | 7              | 12               | 2,8 | 2,1                                                                                     | 2,25                                                                                    | B0101001.0199                                                                           |                                                                                         |                             |               |
|                                                                                              | 3   | x       | 0,35           | 56             | 8              | 18               | 3,5 | 2,7                                                                                     | 2,65                                                                                    | B0101001.0202                                                                           | B0101051.0202                                                                           |                             |               |
|                                                                                              | 3,5 | x       | 0,35           | 56             | 9              | 20               | 4   | 3                                                                                       | 3,15                                                                                    | B0101001.0205                                                                           |                                                                                         | B0208900.0205               | B0208400.0205 |
|                                                                                              | 4   | x       | 0,5            | 63             | 10             | 21               | 4,5 | 3,4                                                                                     | 3,5                                                                                     | B0101001.0210                                                                           | B0101051.0210                                                                           | B0208900.0210               | B0208400.0210 |
|                                                                                              | 5   | x       | 0,5            | 70             | 11             | 25               | 6   | 4,9                                                                                     | 4,5                                                                                     | B0101001.0218                                                                           | B0101051.0218                                                                           | B0208900.0218               | B0208400.0218 |
|                                                                                              | 6   | x       | 0,5            | 80             | 13             | 30               | 6   | 4,9                                                                                     | 5,5                                                                                     | B0101001.0228                                                                           | B0101051.0228                                                                           | B0208900.0228               | B0208400.0228 |
|                                                                                              | 6   | x       | 0,75           | 80             | 13             | 30               | 6   | 4,9                                                                                     | 5,2                                                                                     | B0101001.0229                                                                           | B0101051.0229                                                                           | B0208900.0229               | B0208400.0229 |
|                                                                                              | 7   | x       | 0,75           | 80             | 13             | 30               | 7   | 5,5                                                                                     | 6,2                                                                                     | B0101001.0239                                                                           |                                                                                         | B0208900.0239               | B0208400.0239 |
|                                                                                              | 8   | x       | 0,75           | 80             | 14             | 30               | 8   | 6,2                                                                                     | 7,2                                                                                     | B0101001.0250                                                                           |                                                                                         | B0208900.0250               | B0208400.0250 |
|                                                                                              | 8   | x       | 1              | 90             | 17             | 35               | 8   | 6,2                                                                                     | 7                                                                                       | B0101001.0251                                                                           | B0101051.0251                                                                           | B0208900.0251               | B0208400.0251 |
|                                                                                              | 9   | x       | 0,75           | 90             | 14             | 35               | 9   | 7                                                                                       | 8,2                                                                                     | B0101001.0262                                                                           |                                                                                         | B0208900.0262               | B0208400.0262 |
|                                                                                              | 9   | x       | 1              | 90             | 17             | 35               | 9   | 7                                                                                       | 8                                                                                       | B0101001.0263                                                                           |                                                                                         | B0208900.0263               | B0208400.0263 |
|                                                                                              | 10  | x       | 0,75           | 90             | 15             | 35               | 10  | 8                                                                                       | 9,2                                                                                     | B0101001.0275                                                                           |                                                                                         | B0208900.0275               | B0208400.0275 |
|                                                                                              | 10  | x       | 1              | 90             | 18             | 35               | 10  | 8                                                                                       | 9                                                                                       | B0101001.0276                                                                           | B0101051.0276                                                                           | B0208900.0276               | B0208400.0276 |
| 10                                                                                           | x   | 1,25    | 100            | 18             | 39             | 10               | 8   | 8,8                                                                                     | B0101001.0277                                                                           |                                                                                         | B0208900.0277                                                                           | B0208400.0277               |               |
| DIN 374   |     |         |                |                |                |                  |     |  168 |                                                                                         |  168 |  168 |                             |               |
| DIN 2181  |     |         |                |                |                |                  |     |  194 |  194 |                                                                                         |                                                                                         |                             |               |



Werkzeug-Aufnahmen der Typenreihe  
Softsynchro® siehe Seite 617 - 644

Tool holders of our Softsynchro® series,  
see page 617 - 644

| STEEL<br>Steel materials                        |                                                 | VA<br>Stainless steel materials |                                 | H<br>Materials of high tensile strength                                                                                              |                                                                                                                                                                                             |
|-------------------------------------------------|-------------------------------------------------|---------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                 |                                                 |                                 |                                 |                                                                                                                                      |                                                                                                                                                                                             |
|                                                 |                                                 |                                 |                                 |                                                                                                                                      |                                                                                                                                                                                             |
| 6HX<br>ALCR-102<br>HSSE-PM                      | 6HX<br>ALCR-101<br>HSSE-PM                      | ISO 2/6H<br>TIN<br>HSSE         | ISO 2/6H<br>GLT-1<br>HSSE       | 6HX<br>NT<br>HSSE                                                                                                                    | 6HX<br>VHM                                                                                                                                                                                  |
| B / ≈6<br>E / O                                 | B / ≈6<br>E / O                                 | B / 4-5<br>E / O / P            | B / 4-5<br>E / O / P            | C / 2-3<br>E / O / P                                                                                                                 | C / 2-3<br>E / O                                                                                                                                                                            |
| max. 3 x d <sub>1</sub><br>                     |                                                 | max. 3 x d <sub>1</sub><br>     |                                 | max. 2 x d <sub>1</sub><br>                                                                                                          |                                                                                                                                                                                             |
| P 3.1-5.1                                       | P 3.1-5.1                                       | P 1.1-4.1<br>M 1.1-4.1<br>N 2.2 | P 1.1-4.1<br>M 1.1-4.1<br>N 2.2 | K 1.1-4.2<br>N 4.1                                                                                                                   | K 1.1-4.2<br>N 1.5-1.6<br>N 2.6-2.8<br>N 4.1, 4.3-4.4<br>N 5.1-5.2                                                                                                                          |
| Rekord<br>1B-STEEL-H<br>PM-ALCR-102             | Rekord<br>1B-STEEL-H<br>PM-ALCR-101             | Rekord<br>1B-VA<br>TIN          | Rekord<br>1B-VA<br>GLT-1        | Rekord<br>1A-H<br>NT                                                                                                                 | VHM-Rekord<br>1A-H-IKZ                                                                                                                                                                      |
|                                                 |                                                 |                                 |                                 | B0100501.0196<br>B0100501.0199<br>B0100501.0202<br>B0100501.0205<br>B0100501.0210<br>B0100501.0218<br>B0100501.0228<br>B0100501.0229 | M 2,5 x 0,35<br>2,6 x 0,35<br>3 x 0,35<br>3,5 x 0,35<br>4 x 0,5<br>5 x 0,5<br>6 x 0,5<br>6 x 0,75<br>7 x 0,75<br>8 x 0,75<br>8 x 1<br>9 x 0,75<br>9 x 1<br>10 x 0,75<br>10 x 1<br>10 x 1,25 |
| B0209J01.0251<br>B0209J01.0263<br>B0209J01.0276 | B0208J01.0251<br>B0208J01.0263<br>B0208J01.0276 |                                 |                                 |                                                                                                                                      | B1950901.0229<br>B1950901.0251<br>B1950901.0276<br>B1950901.0277                                                                                                                            |
| 171                                             | 171                                             | 174                             | 174                             | 178                                                                                                                                  | 179                                                                                                                                                                                         |

1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
Rd

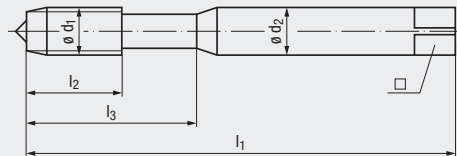
Zubehör  
Accessories




|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|
| <div><div>MF</div><div><div><div>60°</div><div>P</div></div></div><div>DIN 13</div></div> <div><div>DIN 371</div><div><div>HCUT</div><div>Hardened steels</div><div></div><div></div></div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |  |  |  |  |
| <div><div>Technische Informationen</div><div>Technical information</div></div> <div><div>Toleranz · Tolerance</div><div>Beschichtung · Coating</div><div>Schneidstoff · Cutting material</div></div> <div><div></div></div> <div><div>6HX</div><div>TICN</div><div>HSSE-PM</div><div>C / 2-3</div><div>O / P</div></div>                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |  |  |  |  |  |  |  |  |
| <div><div>Gewindetiefe und Lochform</div><div>Thread depth and hole type</div></div> <div><div>max. 1,5 x d<sub>1</sub></div><div></div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |  |  |  |  |  |  |  |
| <div><div>Einsatzgebiete – Material</div><div>Applications – material</div></div> <div><div>» » 78</div></div> <div><div>H</div><div>1.1-1.2</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |  |  |  |  |  |  |  |  |
| <div><div><div><div><div>∅ d<sub>1</sub><br/>mm</div><div>P<br/>mm</div><div>l<sub>1</sub></div><div>l<sub>2</sub></div><div>l<sub>3</sub></div><div>∅ d<sub>2</sub></div><div>□</div></div><div><div>8</div><div>x</div><div>1</div><div>90</div><div>10</div><div>35</div><div>8</div><div>6,2</div></div><div><div>10</div><div>x</div><div>1</div><div>90</div><div>10</div><div>35</div><div>10</div><div>8</div></div></div><div><div></div></div><div><div>Rekord</div><div>1A-HCUT</div><div>PM-TICN</div><div>B010J901.0251</div><div>B010J901.0276</div></div><div><div>7,1</div><div>9,1</div></div></div><div>DIN 374</div><div><div></div></div><div><div>179</div></div></div> |  |  |  |  |  |  |  |  |  |  |  |  |



DIN 13

DIN  
371

Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

|          | $\varnothing d_1$<br>mm | P<br>mm | $l_1$ | $l_2$ | $l_3$ | $\varnothing d_2$ | $\square$ |      | VHM-Rekord<br>1A-HCUT/D<br>TICN | VHM-Rekord<br>1A-HCUT/C<br>TICN |  |  |
|----------|-------------------------|---------|-------|-------|-------|-------------------|-----------|------|---------------------------------|---------------------------------|--|--|
| <b>M</b> | 8                       | x 1     | 90    | 15    | 35    | 8                 | 6,2       | 7,1  | <b>B016K101.0251</b>            | <b>B010K101.0251</b>            |  |  |
|          | 10                      | x 1     | 100   | 18    | 38    | 10                | 8         | 9,1  | <b>B016K101.0276</b>            | <b>B010K101.0276</b>            |  |  |
|          | 12                      | x 1,5   | 110   | 21    | 41    | 12                | 9         | 10,6 | <b>B016K101.0303</b>            | <b>B010K101.0303</b>            |  |  |
|          | 14                      | x 1,5   | 110   | 24    | 44    | 14                | 11        | 12,6 | <b>B016K101.0331</b>            | <b>B010K101.0331</b>            |  |  |
|          | 16                      | x 1,5   | 110   | 24    | 44    | 16                | 12        | 14,6 | <b>B016K101.0359</b>            | <b>B010K101.0359</b>            |  |  |

2) Achtung: VHM-Rekord 1A-HCUT/D-TICN als Vorschneider verwenden!  
Please note: Use solid carbide tap VHM-Rekord 1A-HCUT/D-TICN as No.1 tap!

**HCUT**  
Hardened  
steels


2)

6HX

6HX

TICN

TICN

VHM

VHM

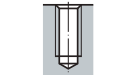
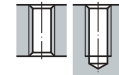
D / 4-5

C / 2-3

O / P

O / P

max. 1,5 x  $d_1$ 

max. 1,5 x  $d_1$ 


H 1.3-1.4

H 1.3-1.4

Product  
Finder

 $v_c$ 

M

**MF**

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
Rd

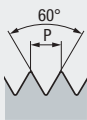
Zubehör  
Accessories

Spiralbohrer Typ EF-Drill-HCUT  
siehe Seite 62

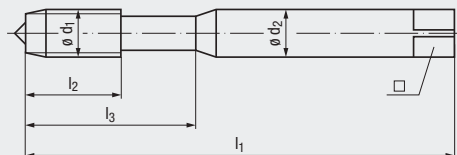
Twist drills type EF-Drill-HCUT,  
see page 62

# MF

DIN 13



DIN  
371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

|          | Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □    |  |
|----------|------------------------|---------|----------------|----------------|----------------|------------------|------|--|
| <b>M</b> | 2,5 x 0,35             | 50      | 5              | 12             | 2,8            | 2,1              | 2,15 |  |
|          | 2,6 x 0,35             | 50      | 5              | 12             | 2,8            | 2,1              | 2,25 |  |
|          | 3 x 0,35               | 56      | 4,5            | 18             | 3,5            | 2,7              | 2,65 |  |
|          | 3,5 x 0,35             | 56      | 5              | 20             | 4              | 3                | 3,15 |  |
|          | 4 x 0,5                | 63      | 5              | 21             | 4,5            | 3,4              | 3,5  |  |
|          | 5 x 0,5                | 70      | 5              | 25             | 6              | 4,9              | 4,5  |  |
|          | 6 x 0,5                | 80      | 5              | 30             | 6              | 4,9              | 5,5  |  |
|          | 6 x 0,75               | 80      | 8              | 30             | 6              | 4,9              | 5,2  |  |
|          | 7 x 0,75               | 80      | 10             | 30             | 7              | 5,5              | 6,2  |  |
|          | 8 x 0,75               | 80      | 8              | 30             | 8              | 6,2              | 7,2  |  |
|          | 8 x 1                  | 90      | 10             | 35             | 8              | 6,2              | 7    |  |
|          | 9 x 0,75               | 90      | 10             | 35             | 9              | 7                | 8,2  |  |
|          | 9 x 1                  | 90      | 10             | 35             | 9              | 7                | 8    |  |
|          | 10 x 0,75              | 90      | 10             | 35             | 10             | 8                | 9,2  |  |
|          | 10 x 1                 | 90      | 10             | 35             | 10             | 8                | 9    |  |
|          | 10 x 1,25              | 100     | 16             | 39             | 10             | 8                | 8,8  |  |

DIN 374



DIN 2181



**Z**  
CNC-controlled  
machines



|           |           |           |           |
|-----------|-----------|-----------|-----------|
| 6HX       | 6HX       | ISO 2/6H  | ISO 2/6H  |
| TIN-70    | GLT-1     |           |           |
| HSSE-PM   | HSSE-PM   | HSSE      | HSSE      |
|           |           | R45       | R45       |
| B / 4-5   | B / 4-5   | C / 2-3   | C / 2-3   |
| E / O / P | E / O / P | E / O / P | E / O / P |

max. 3 x d<sub>1</sub>



max. 3 x d<sub>1</sub>



|                  |                                                                                                                                |                  |                                                                                                   |
|------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------|
| <b>P</b> 2.1-5.1 | <b>P</b> 1.1-5.1<br><b>M</b> 1.1-4.1<br><b>K</b> 1.1-3.2<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1, 2.2-2.3 | <b>P</b> 1.1-3.1 | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1 |
|------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------|

| Rekord<br>1B-Z<br>PM-TIN-70 | Rekord<br>1B-Z<br>PM-GLT-1 | Enorm<br>1-Z  | Enorm<br>1-Z<br>GLT-1 |
|-----------------------------|----------------------------|---------------|-----------------------|
|                             |                            | B0503500.0196 |                       |
|                             |                            | B0503500.0199 |                       |
|                             |                            | B0503500.0202 |                       |
|                             |                            | B0503500.0205 |                       |
| B0208F01.0210               | B020A601.0210              | B0503500.0210 | B050C400.0210         |
| B0208F01.0218               | B020A601.0218              | B0503500.0218 | B050C400.0218         |
|                             |                            | B0503500.0228 | B050C400.0228         |
|                             |                            | B0503500.0229 | B050C400.0229         |
|                             |                            | B0503500.0239 |                       |
|                             |                            | B0503500.0250 |                       |
|                             |                            | B0503500.0251 | B050C400.0251         |
|                             |                            | B0503500.0262 |                       |
|                             |                            | B0503500.0263 |                       |
|                             |                            | B0503500.0275 |                       |
|                             |                            | B0503500.0276 | B050C400.0276         |
|                             |                            | B0503500.0277 | B050C400.0277         |

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181

183

185

| Z<br>CNC-controlled machines                                                            |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  |              |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|--|--|--------------|
|        |        |        |  |        |        |  |  |              |
|                                                                                         | new                                                                                     | new                                                                                     | new                                                                               |                                                                                         | new                                                                                     |  |  |              |
| ISO 2/6H                                                                                | ISO 2/6H                                                                                | ISO 1/4H                                                                                | ISO 1/4H                                                                          | ISO 3/6G                                                                                | ISO 3/6G                                                                                |  |  |              |
|                                                                                         | GLT-1                                                                                   |                                                                                         | GLT-1                                                                             |                                                                                         | GLT-1                                                                                   |  |  |              |
| HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                              | HSSE                                                                                    | HSSE                                                                                    |  |  |              |
| R45                                                                                     | R45                                                                                     | R45                                                                                     | R45                                                                               | R45                                                                                     | R45                                                                                     |  |  |              |
| E / 1,5-2                                                                               | E / 1,5-2                                                                               | C / 2-3                                                                                 | C / 2-3                                                                           | E / 1,5-2                                                                               | E / 1,5-2                                                                               |  |  |              |
| E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                         | E / O / P                                                                               | E / O / P                                                                               |  |  |              |
| max. 3 x d <sub>1</sub>                                                                 |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  |              |
|       |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  |              |
| P 1.1-3.1                                                                               | P 1.1-4.1<br>M 1.1-4.1<br>N 1.4, 2.1-2.2<br>N 2.4-2.5<br>S 1.1                          | P 1.1-3.1                                                                               | P 1.1-4.1<br>M 1.1-4.1<br>N 1.4, 2.1-2.2<br>N 2.4-2.5<br>S 1.1                    | P 1.1-3.1                                                                               | P 1.1-4.1<br>M 1.1-4.1<br>N 1.4, 2.1-2.2<br>N 2.4-2.5<br>S 1.1                          |  |  |              |
| Enorm 1-Z/E                                                                             | Enorm 1-Z/E<br>GLT-1                                                                    | Enorm 1-Z                                                                               | Enorm 1-Z<br>GLT-1                                                                | Enorm 1-Z/E                                                                             | Enorm 1-Z/E<br>GLT-1                                                                    |  |  |              |
|                                                                                         |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  | M 2,5 x 0,35 |
|                                                                                         |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  | 2,6 x 0,35   |
|                                                                                         |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  | 3 x 0,35     |
|                                                                                         |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  | 3,5 x 0,35   |
| B0513500.0210                                                                           | B051C400.0210                                                                           | B0503510.0210                                                                           | B050C410.0210                                                                     | B0513520.0210                                                                           | B051C420.0210                                                                           |  |  | 4 x 0,5      |
| B0513500.0218                                                                           | B051C400.0218                                                                           | B0503510.0218                                                                           | B050C410.0218                                                                     | B0513520.0218                                                                           | B051C420.0218                                                                           |  |  | 5 x 0,5      |
| B0513500.0228                                                                           | B051C400.0228                                                                           | B0503510.0228                                                                           | B050C410.0228                                                                     | B0513520.0228                                                                           | B051C420.0228                                                                           |  |  | 6 x 0,5      |
| B0513500.0229                                                                           | B051C400.0229                                                                           | B0503510.0229                                                                           | B050C410.0229                                                                     | B0513520.0229                                                                           | B051C420.0229                                                                           |  |  | 6 x 0,75     |
|                                                                                         |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  | 7 x 0,75     |
|                                                                                         |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  | 8 x 0,75     |
|                                                                                         |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  | 8 x 1        |
|                                                                                         |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  | 9 x 0,75     |
|                                                                                         |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  | 9 x 1        |
|                                                                                         |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  | 10 x 0,75    |
|                                                                                         |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  | 10 x 1       |
|                                                                                         |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  | 10 x 1,25    |
|  185 |  185 |  186 |                                                                                   |  187 |  187 |  |  |              |
|                                                                                         |                                                                                         |                                                                                         |                                                                                   |                                                                                         |                                                                                         |  |  |              |

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

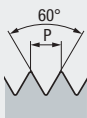
SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

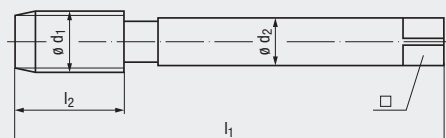
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MF

DIN 13



DIN  
374



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



STEEL  
Steel  
materials



6HX

HSSE

C / 2-3

E / 0



ISO 2/6H

HSSE

B / 4-5

E / 0



ISO 2/6H

TIN  
HSSE

B / 4-5

E / 0



ISO 1/4H

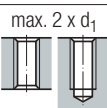
HSSE

B / 4-5

E / 0

Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 78

**K** 1.1-4.2  
**N** 2.3

**P** 1.1-3.1  
**N** 2.2

**P** 1.1-4.1

**P** 1.1-3.1  
**N** 2.2

|                        |    |         |                |                |                  |  | Rekord<br>2A-STEEL | Rekord<br>2B-STEEL-L | Rekord<br>2B-STEEL-L<br>TIN | Rekord<br>2B-STEEL-L |               |               |
|------------------------|----|---------|----------------|----------------|------------------|-------------------------------------------------------------------------------------|--------------------|----------------------|-----------------------------|----------------------|---------------|---------------|
| ø d <sub>1</sub><br>mm |    | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □                                                                                   |                    |                      |                             |                      |               |               |
| M                      | 4  | x       | 0,35           | 63             | 10               | 2,8                                                                                 | 2,1                | 3,65                 | C0101001.0209               | C0208900.0209        | C0208400.0209 |               |
|                        | 4  | x       | 0,5            | 63             | 10               | 2,8                                                                                 | 2,1                | 3,5                  | C0101001.0210               | C0208900.0210        | C0208400.0210 |               |
|                        | 5  | x       | 0,5            | 70             | 11               | 3,5                                                                                 | 2,7                | 4,5                  | C0101001.0218               | C0208900.0218        | C0208400.0218 |               |
|                        | 6  | x       | 0,5            | 80             | 13               | 4,5                                                                                 | 3,4                | 5,5                  | C0101001.0228               | C0208900.0228        | C0208400.0228 |               |
|                        | 6  | x       | 0,75           | 80             | 13               | 4,5                                                                                 | 3,4                | 5,2                  | C0101001.0229               | C0208900.0229        | C0208400.0229 |               |
|                        | 8  | x       | 0,75           | 80             | 14               | 6                                                                                   | 4,9                | 7,2                  | C0101001.0250               | C0208900.0250        | C0208400.0250 |               |
|                        | 8  | x       | 1              | 90             | 17               | 6                                                                                   | 4,9                | 7                    | C0101001.0251               | C0208900.0251        | C0208400.0251 | C0208910.0251 |
|                        | 9  | x       | 1              | 90             | 17               | 7                                                                                   | 5,5                | 8                    | C0101001.0263               | C0208900.0263        | C0208400.0263 |               |
|                        | 10 | x       | 0,75           | 90             | 18               | 7                                                                                   | 5,5                | 9,2                  | C0101001.0275               | C0208900.0275        | C0208400.0275 |               |
|                        | 10 | x       | 1              | 90             | 18               | 7                                                                                   | 5,5                | 9                    | C0101001.0276               | C0208900.0276        | C0208400.0276 | C0208910.0276 |
|                        | 10 | x       | 1,25           | 100            | 22               | 7                                                                                   | 5,5                | 8,8                  | C0101001.0277               | C0208900.0277        | C0208400.0277 |               |
|                        | 11 | x       | 1              | 90             | 18               | 8                                                                                   | 6,2                | 10                   | C0101001.0288               | C0208900.0288        | C0208400.0288 |               |
|                        | 12 | x       | 1              | 100            | 18               | 9                                                                                   | 7                  | 11                   | C0101001.0301               | C0208900.0301        | C0208400.0301 | C0208910.0301 |
|                        | 12 | x       | 1,25           | 100            | 22               | 9                                                                                   | 7                  | 10,8                 | C0101001.0302               | C0208900.0302        | C0208400.0302 |               |
|                        | 12 | x       | 1,5            | 100            | 22               | 9                                                                                   | 7                  | 10,5                 | C0101001.0303               | C0208900.0303        | C0208400.0303 | C0208910.0303 |
|                        | 14 | x       | 1              | 100            | 18               | 11                                                                                  | 9                  | 13                   | C0101001.0329               | C0208900.0329        | C0208400.0329 |               |
|                        | 14 | x       | 1,25           | 100            | 22               | 11                                                                                  | 9                  | 12,8                 | C0101001.0330               | C0208900.0330        | C0208400.0330 |               |
|                        | 14 | x       | 1,5            | 100            | 22               | 11                                                                                  | 9                  | 12,5                 | C0101001.0331               | C0208900.0331        | C0208400.0331 | C0208910.0331 |
|                        | 15 | x       | 1              | 100            | 18               | 12                                                                                  | 9                  | 14                   | C0101001.0343               | C0208900.0343        | C0208400.0343 |               |
|                        | 16 | x       | 1              | 100            | 18               | 12                                                                                  | 9                  | 15                   | C0101001.0357               | C0208900.0357        | C0208400.0357 |               |
|                        | 16 | x       | 1,5            | 100            | 22               | 12                                                                                  | 9                  | 14,5                 | C0101001.0359               | C0208900.0359        | C0208400.0359 | C0208910.0359 |
|                        | 18 | x       | 1              | 110            | 20               | 14                                                                                  | 11                 | 17                   | C0101001.0388               | C0208900.0388        | C0208400.0388 |               |
|                        | 18 | x       | 1,5            | 110            | 25               | 14                                                                                  | 11                 | 16,5                 | C0101001.0390               | C0208900.0390        | C0208400.0390 | C0208910.0390 |
|                        | 18 | x       | 2              | 125            | 26               | 14                                                                                  | 11                 | 16                   | C0101001.0391               | C0208900.0391        | C0208400.0391 |               |
|                        | 20 | x       | 1              | 125            | 20               | 16                                                                                  | 12                 | 19                   | C0101001.0420               | C0208900.0420        | C0208400.0420 |               |
|                        | 20 | x       | 1,5            | 125            | 25               | 16                                                                                  | 12                 | 18,5                 | C0101001.0422               | C0208900.0422        | C0208400.0422 | C0208910.0422 |
|                        | 20 | x       | 2              | 140            | 27               | 16                                                                                  | 12                 | 18                   | C0101001.0423               | C0208900.0423        | C0208400.0423 |               |
|                        | 22 | x       | 1              | 125            | 20               | 18                                                                                  | 14,5               | 21                   | C0101001.0436               | C0208900.0436        | C0208400.0436 |               |
|                        | 22 | x       | 1,5            | 125            | 25               | 18                                                                                  | 14,5               | 20,5                 | C0101001.0438               | C0208900.0438        | C0208400.0438 |               |
|                        | 22 | x       | 2              | 140            | 27               | 18                                                                                  | 14,5               | 20                   | C0101001.0439               | C0208900.0439        | C0208400.0439 |               |
|                        | 24 | x       | 1              | 140            | 20               | 18                                                                                  | 14,5               | 23                   | C0101001.0450               | C0208900.0450        | C0208400.0450 |               |
|                        | 24 | x       | 1,5            | 140            | 27               | 18                                                                                  | 14,5               | 22,5                 | C0101001.0452               | C0208900.0452        | C0208400.0452 |               |
| 24                     | x  | 2       | 140            | 27             | 18               | 14,5                                                                                | 22                 | C0101001.0453        | C0208900.0453               | C0208400.0453        |               |               |
| 25                     | x  | 1,5     | 140            | 28             | 18               | 14,5                                                                                | 23,5               | C0101001.0458        | C0208900.0458               | C0208400.0458        |               |               |
| 26                     | x  | 1,5     | 140            | 28             | 18               | 14,5                                                                                | 24,5               | C0101001.0464        | C0208900.0464               | C0208400.0464        |               |               |

DIN 371

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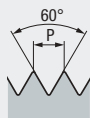
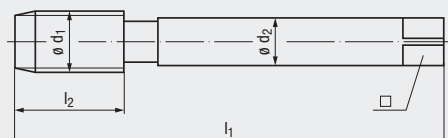
162

DIN 2181

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**MF**

DIN 13

DIN  
374Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

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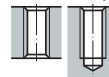
STEEL  
Steel  
materials

6HX

HSSE

C / 2-3

E / 0

max. 2 x d<sub>1</sub>

ISO 2/6H

HSSE

B / 4-5

E / 0



ISO 2/6H

TIN

B / 4-5

E / 0

max. 3 x d<sub>1</sub>

ISO 1/4H

HSSE

B / 4-5

E / 0

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |  | Rekord<br>2A-STEEL | Rekord<br>2B-STEEL-L | Rekord<br>2B-STEEL-L<br>TIN | Rekord<br>2B-STEEL-L |
|------------------------|---------|----------------|----------------|------------------|------|--|--------------------|----------------------|-----------------------------|----------------------|
| M 27 x 1,5             | 140     | 28             | 20             | 16               | 25,5 |  | C0101001.0470      | C0208900.0470        | C0208400.0470               |                      |
| 27 x 2                 | 140     | 28             | 20             | 16               | 25   |  | C0101001.0471      | C0208900.0471        | C0208400.0471               |                      |
| 28 x 1,5               | 140     | 28             | 20             | 16               | 26,5 |  | C0101001.0476      | C0208900.0476        | C0208400.0476               |                      |
| 28 x 2                 | 140     | 28             | 20             | 16               | 26   |  | C0101001.0477      | C0208900.0477        | C0208400.0477               |                      |
| 30 x 1,5               | 150     | 28             | 22             | 18               | 28,5 |  | C0101001.0490      | C0208900.0490        | C0208400.0490               |                      |
| 30 x 2                 | 150     | 28             | 22             | 18               | 28   |  | C0101001.0491      | C0208900.0491        | C0208400.0491               |                      |
| 32 x 1,5               | 150     | 28             | 22             | 18               | 30,5 |  | C0101001.0504      | C0208900.0504        | C0208400.0504               |                      |
| 32 x 2                 | 150     | 28             | 22             | 18               | 30   |  | C0101001.0505      | C0208900.0505        | C0208400.0505               |                      |
| 33 x 1,5               | 160     | 30             | 25             | 20               | 31,5 |  | C0101001.0511      | C0208900.0511        | C0208400.0511               |                      |
| 33 x 2                 | 160     | 30             | 25             | 20               | 31   |  | C0101001.0512      | C0208900.0512        | C0208400.0512               |                      |
| 34 x 1,5               | 170     | 30             | 28             | 22               | 32,5 |  | C0101001.0518      | C0208900.0518        | C0208400.0518               |                      |
| 35 x 1,5               | 170     | 30             | 28             | 22               | 33,5 |  | C0101001.0525      | C0208900.0525        | C0208400.0525               |                      |
| 36 x 1,5               | 170     | 30             | 28             | 22               | 34,5 |  | C0101001.0532      | C0208900.0532        | C0208400.0532               |                      |
| 36 x 2                 | 170     | 30             | 28             | 22               | 34   |  | C0101001.0533      | C0208900.0533        | C0208400.0533               |                      |
| 36 x 3                 | 200     | 42             | 28             | 22               | 33   |  | C0101001.0534      | C0208900.0534        | C0208400.0534               |                      |
| 38 x 1,5               | 170     | 30             | 28             | 22               | 36,5 |  | C0101001.0546      | C0208900.0546        | C0208400.0546               |                      |
| 39 x 1,5               | 170     | 30             | 32             | 24               | 37,5 |  | C0101001.0553      | C0208900.0553        | C0208400.0553               |                      |
| 39 x 2                 | 170     | 30             | 32             | 24               | 37   |  | C0101001.0554      | C0208900.0554        | C0208400.0554               |                      |
| 40 x 1,5               | 170     | 30             | 32             | 24               | 38,5 |  | C0101001.0560      | C0208900.0560        | C0208400.0560               |                      |
| 40 x 2                 | 170     | 30             | 32             | 24               | 38   |  | C0101001.0561      | C0208900.0561        | C0208400.0561               |                      |
| 42 x 1,5               | 170     | 30             | 32             | 24               | 40,5 |  | C0101001.0574      | C0208900.0574        | C0208400.0574               |                      |
| 42 x 2                 | 170     | 30             | 32             | 24               | 40   |  | C0101001.0575      | C0208900.0575        | C0208400.0575               |                      |
| 42 x 3                 | 200     | 45             | 32             | 24               | 39   |  | C0101001.0576      | C0208900.0576        | C0208400.0576               |                      |
| 45 x 1,5               | 180     | 32             | 36             | 29               | 43,5 |  | C0101001.0595      | C0208900.0595        | C0208400.0595               |                      |
| 45 x 2                 | 180     | 32             | 36             | 29               | 43   |  | C0101001.0596      | C0208900.0596        | C0208400.0596               |                      |
| 45 x 3                 | 200     | 45             | 36             | 29               | 42   |  | C0101001.0597      | C0208900.0597        | C0208400.0597               |                      |
| 48 x 1,5               | 190     | 32             | 36             | 29               | 46,5 |  | C0101001.0616      | C0208900.0616        | C0208400.0616               |                      |
| 48 x 2                 | 190     | 32             | 36             | 29               | 46   |  | C0101001.0617      | C0208900.0617        | C0208400.0617               |                      |
| 48 x 3                 | 225     | 50             | 36             | 29               | 45   |  | C0101001.0618      | C0208900.0618        | C0208400.0618               |                      |
| 50 x 1,5               | 190     | 32             | 36             | 29               | 48,5 |  | C0101001.0630      | C0208900.0630        | C0208400.0630               |                      |
| 50 x 2                 | 190     | 32             | 36             | 29               | 48   |  | C0101001.0631      | C0208900.0631        | C0208400.0631               |                      |
| 52 x 1,5               | 190     | 32             | 40             | 32               | 50,5 |  | C0101001.0644      | C0208900.0644        | C0208400.0644               |                      |
| 52 x 2                 | 190     | 32             | 40             | 32               | 50   |  | C0101001.0645      | C0208900.0645        | C0208400.0645               |                      |
| 52 x 3                 | 225     | 50             | 40             | 32               | 49   |  | C0101001.0646      | C0208900.0646        | C0208400.0646               |                      |

DIN 371



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DIN 2181

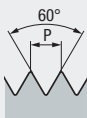


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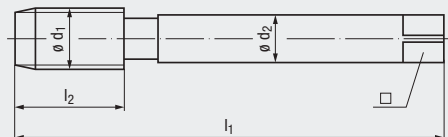
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MF

DIN 13



DIN  
374



**STEEL**  
Steel  
materials



| ISO 1/4H | ISO 3/6G | ISO 3/6G | ISO 2/6H |
|----------|----------|----------|----------|
| TIN      | HSSE     | TIN      | HSSE     |
| HSSE     | HSSE     | HSSE     | HSSE     |
| B / 4-5  | B / 4-5  | B / 4-5  | B / 4-5  |
| E / O    | E / O    | E / O    | E / O    |

Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

max. 3 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

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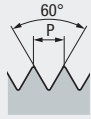
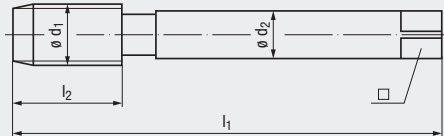
|           |                    |           |                    |
|-----------|--------------------|-----------|--------------------|
| P 1.1-4.1 | P 1.1-3.1<br>N 2.2 | P 1.1-4.1 | P 1.1-3.1<br>N 2.2 |
|-----------|--------------------|-----------|--------------------|

|          | Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |  | Rekord<br>2B-STEEL-L<br>TIN | Rekord<br>2B-STEEL-L | Rekord<br>2B-STEEL-L<br>TIN | Rekord<br>2B-STEEL-L-LH |
|----------|------------------------|---------|----------------|----------------|------------------|------|--|-----------------------------|----------------------|-----------------------------|-------------------------|
| <b>M</b> | 6 x 0,5                | 80      | 13             | 4,5            | 3,4              | 5,5  |  |                             |                      |                             |                         |
|          | 6 x 0,75               | 80      | 13             | 4,5            | 3,4              | 5,2  |  |                             |                      |                             |                         |
|          | 8 x 0,75               | 80      | 14             | 6              | 4,9              | 7,2  |  |                             |                      |                             |                         |
|          | 8 x 1                  | 90      | 17             | 6              | 4,9              | 7    |  | C0208410.0251               | C0208920.0251        | C0208420.0251               | C0208950.0251           |
|          | 9 x 1                  | 90      | 17             | 7              | 5,5              | 8    |  |                             |                      |                             |                         |
|          | 10 x 0,75              | 90      | 18             | 7              | 5,5              | 9,2  |  |                             |                      |                             |                         |
|          | 10 x 1                 | 90      | 18             | 7              | 5,5              | 9    |  | C0208410.0276               | C0208920.0276        | C0208420.0276               | C0208950.0276           |
|          | 10 x 1,25              | 100     | 22             | 7              | 5,5              | 8,8  |  |                             |                      |                             |                         |
|          | 11 x 1                 | 90      | 18             | 8              | 6,2              | 10   |  |                             |                      |                             |                         |
|          | 12 x 1                 | 100     | 18             | 9              | 7                | 11   |  | C0208410.0301               | C0208920.0301        | C0208420.0301               | C0208950.0301           |
|          | 12 x 1,25              | 100     | 22             | 9              | 7                | 10,8 |  |                             |                      |                             |                         |
|          | 12 x 1,5               | 100     | 22             | 9              | 7                | 10,5 |  | C0208410.0303               | C0208920.0303        | C0208420.0303               | C0208950.0303           |
|          | 14 x 1                 | 100     | 18             | 11             | 9                | 13   |  |                             |                      |                             |                         |
|          | 14 x 1,25              | 100     | 22             | 11             | 9                | 12,8 |  |                             |                      |                             |                         |
|          | 14 x 1,5               | 100     | 22             | 11             | 9                | 12,5 |  | C0208410.0331               | C0208920.0331        | C0208420.0331               | C0208950.0331           |
|          | 15 x 1                 | 100     | 18             | 12             | 9                | 14   |  |                             |                      |                             |                         |
|          | 16 x 1                 | 100     | 18             | 12             | 9                | 15   |  |                             |                      |                             |                         |
|          | 16 x 1,5               | 100     | 22             | 12             | 9                | 14,5 |  | C0208410.0359               | C0208920.0359        | C0208420.0359               | C0208950.0359           |
|          | 18 x 1                 | 110     | 20             | 14             | 11               | 17   |  |                             |                      |                             |                         |
|          | 18 x 1,5               | 110     | 25             | 14             | 11               | 16,5 |  | C0208410.0390               | C0208920.0390        | C0208420.0390               | C0208950.0390           |
|          | 18 x 2                 | 125     | 26             | 14             | 11               | 16   |  |                             |                      |                             |                         |
|          | 20 x 1                 | 125     | 20             | 16             | 12               | 19   |  |                             |                      |                             |                         |
|          | 20 x 1,5               | 125     | 25             | 16             | 12               | 18,5 |  | C0208410.0422               | C0208920.0422        | C0208420.0422               | C0208950.0422           |
|          | 20 x 2                 | 140     | 27             | 16             | 12               | 18   |  |                             |                      |                             |                         |
|          | 22 x 1                 | 125     | 20             | 18             | 14,5             | 21   |  |                             |                      |                             |                         |
|          | 22 x 1,5               | 125     | 25             | 18             | 14,5             | 20,5 |  |                             |                      |                             |                         |
|          | 22 x 2                 | 140     | 27             | 18             | 14,5             | 20   |  |                             |                      |                             |                         |
|          | 24 x 1                 | 140     | 20             | 18             | 14,5             | 23   |  |                             |                      |                             |                         |
|          | 24 x 1,5               | 140     | 27             | 18             | 14,5             | 22,5 |  |                             |                      |                             |                         |
|          | 24 x 2                 | 140     | 27             | 18             | 14,5             | 22   |  |                             |                      |                             |                         |



**MF**

DIN 13

DIN  
374Technische Informationen  
Technical informationGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

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STEEL  
Steel  
materials

ISO 2/6H

TIN

HSSE

LH

B / 4-5

E / O

6HX

ALCR-102

HSSE-PM

B / ≈6

E / O

6HX

ALCR-101

HSSE-PM

B / ≈6

E / O

max. 3 x d<sub>1</sub>

P 1.1-4.1

P 3.1-5.1

P 3.1-5.1

Rekord  
2B-STEEL-L-LH  
TINRekord  
2B-STEEL-H  
PM-ALCR-102Rekord  
2B-STEEL-H  
PM-ALCR-101

|          | ø d <sub>1</sub><br>mm |   | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |      |               |               |               |
|----------|------------------------|---|---------|----------------|----------------|------------------|------|------|---------------|---------------|---------------|
| <b>M</b> | 6                      | x | 0,5     | 80             | 13             | 4,5              | 3,4  | 5,5  |               |               |               |
|          | 6                      | x | 0,75    | 80             | 13             | 4,5              | 3,4  | 5,2  |               |               |               |
|          | 8                      | x | 0,75    | 80             | 14             | 6                | 4,9  | 7,2  |               |               |               |
|          | 8                      | x | 1       | 90             | 17             | 6                | 4,9  | 7    | C0208450.0251 |               |               |
|          | 9                      | x | 1       | 90             | 17             | 7                | 5,5  | 8    |               |               |               |
|          | 10                     | x | 0,75    | 90             | 18             | 7                | 5,5  | 9,2  |               |               |               |
|          | 10                     | x | 1       | 90             | 18             | 7                | 5,5  | 9    | C0208450.0276 |               |               |
|          | 10                     | x | 1,25    | 100            | 22             | 7                | 5,5  | 8,8  |               |               |               |
|          | 11                     | x | 1       | 90             | 18             | 8                | 6,2  | 10   |               |               |               |
|          | 12                     | x | 1       | 100            | 18             | 9                | 7    | 11   | C0208450.0301 |               |               |
|          | 12                     | x | 1,25    | 100            | 22             | 9                | 7    | 10,8 |               |               |               |
|          | 12                     | x | 1,5     | 100            | 22             | 9                | 7    | 10,5 | C0208450.0303 | C0209J01.0303 | C0208J01.0303 |
|          | 14                     | x | 1       | 100            | 18             | 11               | 9    | 13   |               |               |               |
|          | 14                     | x | 1,25    | 100            | 22             | 11               | 9    | 12,8 |               |               |               |
|          | 14                     | x | 1,5     | 100            | 22             | 11               | 9    | 12,5 | C0208450.0331 | C0209J01.0331 | C0208J01.0331 |
|          | 15                     | x | 1       | 100            | 18             | 12               | 9    | 14   |               |               |               |
|          | 16                     | x | 1       | 100            | 18             | 12               | 9    | 15   |               |               |               |
|          | 16                     | x | 1,5     | 100            | 22             | 12               | 9    | 14,5 | C0208450.0359 | C0209J01.0359 | C0208J01.0359 |
|          | 18                     | x | 1       | 110            | 20             | 14               | 11   | 17   |               |               |               |
|          | 18                     | x | 1,5     | 110            | 25             | 14               | 11   | 16,5 | C0208450.0390 |               |               |
|          | 18                     | x | 2       | 125            | 26             | 14               | 11   | 16   |               |               |               |
|          | 20                     | x | 1       | 125            | 20             | 16               | 12   | 19   |               |               |               |
|          | 20                     | x | 1,5     | 125            | 25             | 16               | 12   | 18,5 | C0208450.0422 |               |               |
|          | 20                     | x | 2       | 140            | 27             | 16               | 12   | 18   |               |               |               |
|          | 22                     | x | 1       | 125            | 20             | 18               | 14,5 | 21   |               |               |               |
|          | 22                     | x | 1,5     | 125            | 25             | 18               | 14,5 | 20,5 |               |               |               |
|          | 22                     | x | 2       | 140            | 27             | 18               | 14,5 | 20   |               |               |               |
|          | 24                     | x | 1       | 140            | 20             | 18               | 14,5 | 23   |               |               |               |
|          | 24                     | x | 1,5     | 140            | 27             | 18               | 14,5 | 22,5 |               |               |               |
|          | 24                     | x | 2       | 140            | 27             | 18               | 14,5 | 22   |               |               |               |

DIN 371



163

163

DIN 2181

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

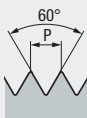
SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

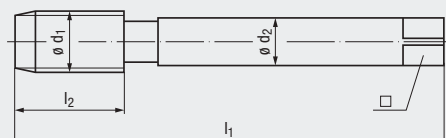
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MF

DIN 13



DIN  
374



|                                                   |                                 |
|---------------------------------------------------|---------------------------------|
| Technische Informationen<br>Technical information | Toleranz · Tolerance            |
|                                                   | Beschichtung · Coating          |
|                                                   | Schneidstoff · Cutting material |
|                                                   |                                 |

Gewindetiefe und Lochform  
Thread depth and hole type

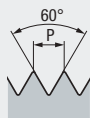
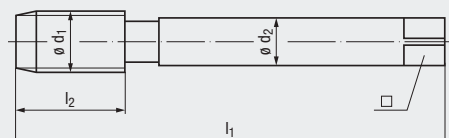
Einsatzgebiete – Material  
Applications – material

» 78

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |                      | Rekord<br>2D-STEEL   | Rekord<br>2D-STEEL/E | Enorm<br>2-STEEL | Enorm<br>2-STEEL<br>TIN |
|------------------------|---------|----------------|----------------|------------------|------|----------------------|----------------------|----------------------|------------------|-------------------------|
| <b>M</b>               |         |                |                |                  |      |                      |                      |                      |                  |                         |
| 4 x 0,35               | 63      | 10             | 2,8            | 2,1              | 3,65 |                      |                      |                      |                  |                         |
| 4 x 0,5                | 63      | 10             | 2,8            | 2,1              | 3,5  |                      |                      |                      |                  |                         |
| 5 x 0,5                | 70      | 11             | 3,5            | 2,7              | 4,5  |                      |                      |                      |                  |                         |
| 6 x 0,5                | 80      | 13             | 4,5            | 3,4              | 5,5  |                      |                      |                      |                  |                         |
| 6 x 0,75               | 80      | 13             | 4,5            | 3,4              | 5,2  | C0451000.0229        |                      |                      | C0501000.0229    | C0501400.0229           |
| 8 x 0,75               | 80      | 14             | 6              | 4,9              | 7,2  | C0451000.0250        |                      |                      |                  |                         |
| 8 x 1                  | 90      | 17             | 6              | 4,9              | 7    | <b>C0451000.0251</b> | <b>C0461000.0251</b> | C0501000.0251        | C0501400.0251    |                         |
| 9 x 1                  | 90      | 17             | 7              | 5,5              | 8    | <b>C0451000.0263</b> |                      |                      |                  |                         |
| 10 x 0,75              | 90      | 18             | 7              | 5,5              | 9,2  | C0451000.0275        |                      |                      |                  |                         |
| 10 x 1                 | 90      | 18             | 7              | 5,5              | 9    | <b>C0451000.0276</b> | <b>C0461000.0276</b> | C0501000.0276        | C0501400.0276    |                         |
| 10 x 1,25              | 100     | 22             | 7              | 5,5              | 8,8  | <b>C0451000.0277</b> |                      |                      |                  |                         |
| 11 x 1                 | 90      | 18             | 8              | 6,2              | 10   | C0451000.0288        |                      |                      |                  |                         |
| 12 x 1                 | 100     | 18             | 9              | 7                | 11   | <b>C0451000.0301</b> | <b>C0461000.0301</b> | C0501000.0301        | C0501400.0301    |                         |
| 12 x 1,25              | 100     | 22             | 9              | 7                | 10,8 | <b>C0451000.0302</b> |                      |                      |                  |                         |
| 12 x 1,5               | 100     | 22             | 9              | 7                | 10,5 | <b>C0451000.0303</b> | <b>C0461000.0303</b> | C0501000.0303        | C0501400.0303    |                         |
| 14 x 1                 | 100     | 18             | 11             | 9                | 13   | <b>C0451000.0329</b> |                      |                      |                  |                         |
| 14 x 1,25              | 100     | 22             | 11             | 9                | 12,8 | C0451000.0330        |                      |                      |                  |                         |
| 14 x 1,5               | 100     | 22             | 11             | 9                | 12,5 | <b>C0451000.0331</b> | <b>C0461000.0331</b> | C0501000.0331        | C0501400.0331    |                         |
| 15 x 1                 | 100     | 18             | 12             | 9                | 14   | <b>C0451000.0343</b> |                      |                      |                  |                         |
| 16 x 1                 | 100     | 18             | 12             | 9                | 15   | <b>C0451000.0357</b> |                      |                      |                  |                         |
| 16 x 1,5               | 100     | 22             | 12             | 9                | 14,5 | <b>C0451000.0359</b> | <b>C0461000.0359</b> | C0501000.0359        | C0501400.0359    |                         |
| 18 x 1                 | 110     | 20             | 14             | 11               | 17   | <b>C0451000.0388</b> |                      |                      |                  |                         |
| 18 x 1,5               | 110     | 25             | 14             | 11               | 16,5 | <b>C0451000.0390</b> | <b>C0461000.0390</b> | C0501000.0390        | C0501400.0390    |                         |
| 18 x 2                 | 125     | 26             | 14             | 11               | 16   | C0451000.0391        |                      |                      |                  |                         |
| 20 x 1                 | 125     | 20             | 16             | 12               | 19   | C0451000.0420        |                      |                      |                  |                         |
| 20 x 1,5               | 125     | 25             | 16             | 12               | 18,5 | <b>C0451000.0422</b> | <b>C0461000.0422</b> | C0501000.0422        | C0501400.0422    |                         |
| 20 x 2                 | 140     | 27             | 16             | 12               | 18   | <b>C0451000.0423</b> |                      |                      |                  |                         |
| 22 x 1                 | 125     | 20             | 18             | 14,5             | 21   | C0451000.0436        |                      |                      |                  |                         |
| 22 x 1,5               | 125     | 25             | 18             | 14,5             | 20,5 | <b>C0451000.0438</b> | <b>C0461000.0438</b> | C0501000.0438        | C0501400.0438    |                         |
| 22 x 2                 | 140     | 27             | 18             | 14,5             | 20   | C0451000.0439        |                      |                      |                  |                         |
| 24 x 1                 | 140     | 20             | 18             | 14,5             | 23   | C0451000.0450        |                      |                      |                  |                         |
| 24 x 1,5               | 140     | 27             | 18             | 14,5             | 22,5 | <b>C0451000.0452</b> | <b>C0461000.0452</b> | C0501000.0452        | C0501400.0452    |                         |
| 24 x 2                 | 140     | 27             | 18             | 14,5             | 22   | <b>C0451000.0453</b> |                      |                      |                  |                         |
| 25 x 1,5               | 140     | 28             | 18             | 14,5             | 23,5 | C0451000.0458        |                      |                      |                  |                         |
| 26 x 1,5               | 140     | 28             | 18             | 14,5             | 24,5 | C0451000.0464        |                      |                      |                  |                         |

**MF**

DIN 13

DIN  
374Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

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STEEL  
Steel  
materials

ISO 2/6H

HSSE

R15

C / 2-3

E / 0

ISO 2/6H

HSSE

R15

E / 1,5-2

E / 0

ISO 2/6H

HSSE

R35

C / 2-3

E / 0

ISO 2/6H

TIN

HSSE

R35

C / 2-3

E / 0

max. 2 x d<sub>1</sub>max. 2,5 x d<sub>1</sub>

P 2.1-3.1

P 2.1-3.1

P 1.1-3.1

N 2.2

P 1.1-3.1

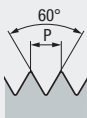
N 2.2

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |                      | Rekord<br>2D-STEEL | Rekord<br>2D-STEEL/E | Enorm<br>2-STEEL     | Enorm<br>2-STEEL<br>TIN |
|------------------------|---------|----------------|----------------|------------------|------|----------------------|--------------------|----------------------|----------------------|-------------------------|
| <b>M</b>               |         |                |                |                  |      |                      |                    |                      |                      |                         |
| 27 x 1,5               | 140     | 28             | 20             | 16               | 25,5 | C0451000.0470        |                    |                      |                      |                         |
| 27 x 2                 | 140     | 28             | 20             | 16               | 25   | C0451000.0471        |                    |                      |                      |                         |
| 28 x 1,5               | 140     | 28             | 20             | 16               | 26,5 | C0451000.0476        |                    |                      |                      |                         |
| 28 x 2                 | 140     | 28             | 20             | 16               | 26   | C0451000.0477        |                    |                      |                      |                         |
| 30 x 1,5               | 150     | 28             | 22             | 18               | 28,5 | <b>C0451000.0490</b> |                    | <b>C0501000.0490</b> | <b>C0501400.0490</b> |                         |
| 30 x 2                 | 150     | 28             | 22             | 18               | 28   | <b>C0451000.0491</b> |                    | <b>C0501000.0491</b> | <b>C0501400.0491</b> |                         |
| 32 x 1,5               | 150     | 28             | 22             | 18               | 30,5 | C0451000.0504        |                    | <b>C0501000.0504</b> | <b>C0501400.0504</b> |                         |
| 32 x 2                 | 150     | 28             | 22             | 18               | 30   |                      |                    | C0501000.0505        |                      |                         |
| 33 x 1,5               | 160     | 30             | 25             | 20               | 31,5 | C0451000.0511        |                    | <b>C0501000.0511</b> | <b>C0501400.0511</b> |                         |
| 33 x 2                 | 160     | 30             | 25             | 20               | 31   | C0451000.0512        |                    | <b>C0501000.0512</b> | <b>C0501400.0512</b> |                         |
| 34 x 1,5               | 170     | 30             | 28             | 22               | 32,5 | C0451000.0518        |                    | <b>C0501000.0518</b> | <b>C0501400.0518</b> |                         |
| 35 x 1,5               | 170     | 30             | 28             | 22               | 33,5 | C0451000.0525        |                    | <b>C0501000.0525</b> | <b>C0501400.0525</b> |                         |
| 36 x 1,5               | 170     | 30             | 28             | 22               | 34,5 | C0451000.0532        |                    | <b>C0501000.0532</b> | <b>C0501400.0532</b> |                         |
| 36 x 2                 | 170     | 30             | 28             | 22               | 34   | C0451000.0533        |                    | <b>C0501000.0533</b> | <b>C0501400.0533</b> |                         |
| 36 x 3                 | 200     | 42             | 28             | 22               | 33   | C0451000.0534        |                    | <b>C0501000.0534</b> | <b>C0501400.0534</b> |                         |
| 38 x 1,5               | 170     | 30             | 28             | 22               | 36,5 | C0451000.0546        |                    | <b>C0501000.0546</b> | <b>C0501400.0546</b> |                         |
| 39 x 1,5               | 170     | 30             | 32             | 24               | 37,5 |                      |                    | C0501000.0553        |                      |                         |
| 39 x 2                 | 170     | 30             | 32             | 24               | 37   | C0451000.0554        |                    | C0501000.0554        |                      |                         |
| 40 x 1,5               | 170     | 30             | 32             | 24               | 38,5 | C0451000.0560        |                    | <b>C0501000.0560</b> | <b>C0501400.0560</b> |                         |
| 40 x 2                 | 170     | 30             | 32             | 24               | 38   | C0451000.0561        |                    | C0501000.0561        |                      |                         |
| 42 x 1,5               | 170     | 30             | 32             | 24               | 40,5 | C0451000.0574        |                    | <b>C0501000.0574</b> | <b>C0501400.0574</b> |                         |
| 42 x 2                 | 170     | 30             | 32             | 24               | 40   | C0451000.0575        |                    | <b>C0501000.0575</b> | <b>C0501400.0575</b> |                         |
| 42 x 3                 | 200     | 45             | 32             | 24               | 39   | C0451000.0576        |                    | <b>C0501000.0576</b> | <b>C0501400.0576</b> |                         |
| 45 x 1,5               | 180     | 32             | 36             | 29               | 43,5 | C0451000.0595        |                    | <b>C0501000.0595</b> | <b>C0501400.0595</b> |                         |
| 45 x 2                 | 180     | 32             | 36             | 29               | 43   | C0451000.0596        |                    | C0501000.0596        |                      |                         |
| 45 x 3                 | 200     | 45             | 36             | 29               | 42   | C0451000.0597        |                    | C0501000.0597        |                      |                         |
| 48 x 1,5               | 190     | 32             | 36             | 29               | 46,5 | C0451000.0616        |                    | <b>C0501000.0616</b> | <b>C0501400.0616</b> |                         |
| 48 x 2                 | 190     | 32             | 36             | 29               | 46   | C0451000.0617        |                    | <b>C0501000.0617</b> | <b>C0501400.0617</b> |                         |
| 48 x 3                 | 225     | 50             | 36             | 29               | 45   | C0451000.0618        |                    | <b>C0501000.0618</b> | <b>C0501400.0618</b> |                         |
| 50 x 1,5               | 190     | 32             | 36             | 29               | 48,5 | C0451000.0630        |                    | <b>C0501000.0630</b> | <b>C0501400.0630</b> |                         |
| 50 x 2                 | 190     | 32             | 36             | 29               | 48   | C0451000.0631        |                    |                      |                      |                         |
| 52 x 1,5               | 190     | 32             | 40             | 32               | 50,5 | C0451000.0644        |                    | <b>C0501000.0644</b> | <b>C0501400.0644</b> |                         |
| 52 x 2                 | 190     | 32             | 40             | 32               | 50   | C0451000.0645        |                    | <b>C0501000.0645</b> | <b>C0501400.0645</b> |                         |
| 52 x 3                 | 225     | 50             | 40             | 32               | 49   | C0451000.0646        |                    | C0501000.0646        |                      |                         |

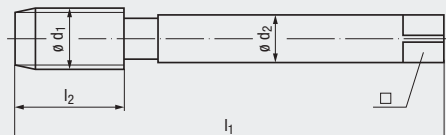
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MF

DIN 13



DIN  
374



VA  
Stainless steel  
materials



|           |           |           |           |
|-----------|-----------|-----------|-----------|
| ISO 2/6H  | ISO 2/6H  | ISO 2/6H  | ISO 1/4H  |
| NT        | TIN       | GLT-1     | NT        |
| HSSE      | HSSE      | HSSE      | HSSE      |
| B / 4-5   | B / 4-5   | B / 4-5   | B / 4-5   |
| E / O / P | E / O / P | E / O / P | E / O / P |

Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

max. 3 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

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|                         |           |                                 |                         |
|-------------------------|-----------|---------------------------------|-------------------------|
| P 2.1-3.1<br>N 2.2, 2.5 | P 1.1-4.1 | P 1.1-4.1<br>M 1.1-4.1<br>N 2.2 | P 2.1-3.1<br>N 2.2, 2.5 |
|-------------------------|-----------|---------------------------------|-------------------------|

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |  | Rekord<br>2B-VA<br>NT | Rekord<br>2B-VA<br>TIN | Rekord<br>2B-VA<br>GLT-1 | Rekord<br>2B-VA<br>NT |
|------------------------|---------|----------------|----------------|------------------|------|--|-----------------------|------------------------|--------------------------|-----------------------|
| <b>M</b>               |         |                |                |                  |      |  |                       |                        |                          |                       |
| 6 x 0,5                | 80      | 13             | 4,5            | 3,4              | 5,5  |  | C0203000.0228         | C0203100.0228          | C020C300.0228            |                       |
| 6 x 0,75               | 80      | 13             | 4,5            | 3,4              | 5,2  |  | C0203000.0229         | C0203100.0229          | C020C300.0229            |                       |
| 8 x 0,75               | 80      | 14             | 6              | 4,9              | 7,2  |  | C0203000.0250         | C0203100.0250          | C020C300.0250            |                       |
| 8 x 1                  | 90      | 17             | 6              | 4,9              | 7    |  | C0203000.0251         | C0203100.0251          | C020C300.0251            | C0203010.0251         |
| 9 x 1                  | 90      | 17             | 7              | 5,5              | 8    |  |                       |                        |                          |                       |
| 10 x 0,75              | 90      | 18             | 7              | 5,5              | 9,2  |  |                       |                        |                          |                       |
| 10 x 1                 | 90      | 18             | 7              | 5,5              | 9    |  | C0203000.0276         | C0203100.0276          | C020C300.0276            | C0203010.0276         |
| 10 x 1,25              | 100     | 22             | 7              | 5,5              | 8,8  |  |                       |                        |                          |                       |
| 11 x 1                 | 90      | 18             | 8              | 6,2              | 10   |  |                       |                        |                          |                       |
| 12 x 1                 | 100     | 18             | 9              | 7                | 11   |  | C0203000.0301         | C0203100.0301          | C020C300.0301            | C0203010.0301         |
| 12 x 1,25              | 100     | 22             | 9              | 7                | 10,8 |  |                       |                        |                          |                       |
| 12 x 1,5               | 100     | 22             | 9              | 7                | 10,5 |  | C0203000.0303         | C0203100.0303          | C020C300.0303            | C0203010.0303         |
| 14 x 1                 | 100     | 18             | 11             | 9                | 13   |  | C0203000.0329         | C0203100.0329          | C020C300.0329            |                       |
| 14 x 1,25              | 100     | 22             | 11             | 9                | 12,8 |  | C0203000.0330         | C0203100.0330          | C020C300.0330            |                       |
| 14 x 1,5               | 100     | 22             | 11             | 9                | 12,5 |  | C0203000.0331         | C0203100.0331          | C020C300.0331            | C0203010.0331         |
| 15 x 1                 | 100     | 18             | 12             | 9                | 14   |  |                       |                        |                          |                       |
| 16 x 1                 | 100     | 18             | 12             | 9                | 15   |  | C0203000.0357         | C0203100.0357          | C020C300.0357            |                       |
| 16 x 1,5               | 100     | 22             | 12             | 9                | 14,5 |  | C0203000.0359         | C0203100.0359          | C020C300.0359            | C0203010.0359         |
| 18 x 1                 | 110     | 20             | 14             | 11               | 17   |  |                       |                        |                          |                       |
| 18 x 1,5               | 110     | 25             | 14             | 11               | 16,5 |  | C0203000.0390         | C0203100.0390          | C020C300.0390            | C0203010.0390         |
| 18 x 2                 | 125     | 26             | 14             | 11               | 16   |  |                       |                        |                          |                       |
| 20 x 1                 | 125     | 20             | 16             | 12               | 19   |  | C0203000.0420         | C0203100.0420          | C020C300.0420            |                       |
| 20 x 1,5               | 125     | 25             | 16             | 12               | 18,5 |  | C0203000.0422         | C0203100.0422          | C020C300.0422            | C0203010.0422         |
| 20 x 2                 | 140     | 27             | 16             | 12               | 18   |  | C0203000.0423         | C0203100.0423          | C020C300.0423            |                       |
| 22 x 1                 | 125     | 20             | 18             | 14,5             | 21   |  |                       |                        |                          |                       |
| 22 x 1,5               | 125     | 25             | 18             | 14,5             | 20,5 |  | C0203000.0438         | C0203100.0438          | C020C300.0438            |                       |
| 22 x 2                 | 140     | 27             | 18             | 14,5             | 20   |  | C0203000.0439         | C0203100.0439          | C020C300.0439            |                       |
| 24 x 1                 | 140     | 20             | 18             | 14,5             | 23   |  |                       |                        |                          |                       |
| 24 x 1,5               | 140     | 27             | 18             | 14,5             | 22,5 |  | C0203000.0452         | C0203100.0452          | C020C300.0452            |                       |
| 24 x 2                 | 140     | 27             | 18             | 14,5             | 22   |  |                       |                        |                          |                       |
| 25 x 1,5               | 140     | 28             | 18             | 14,5             | 23,5 |  | C0203000.0458         | C0203100.0458          | C020C300.0458            |                       |
| 26 x 1,5               | 140     | 28             | 18             | 14,5             | 24,5 |  | C0203000.0464         | C0203100.0464          | C020C300.0464            |                       |
| 27 x 1,5               | 140     | 28             | 20             | 16               | 25,5 |  |                       |                        |                          |                       |
| 27 x 2                 | 140     | 28             | 20             | 16               | 25   |  |                       |                        |                          |                       |
| 28 x 1,5               | 140     | 28             | 20             | 16               | 26,5 |  | C0203000.0476         | C0203100.0476          | C020C300.0476            |                       |

DIN 371



163

163

DIN 2181



| VA<br>Stainless steel<br>materials                                                                                                                                     |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     | INOX<br>Stainless steel<br>materials                                                                                                                                                                    |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <br> | <br> | <br> | <br> | <br> | <br><br>$l_p \approx 10 \times P$ | <br><br>$l_p \approx 10 \times P$ | <b>new</b> |
| ISO 1/4H<br>TIN<br>HSSE<br>B / 4-5<br>E / O / P                                                                                                                        | ISO 1/4H<br>GLT-1<br>HSSE<br>B / 4-5<br>E / O / P                                                                                                                      | ISO 3/6G<br>NT<br>HSSE<br>B / 4-5<br>E / O / P                                                                                                                         | ISO 3/6G<br>TIN<br>HSSE<br>B / 4-5<br>E / O / P                                                                                                                        | ISO 3/6G<br>GLT-1<br>HSSE<br>B / 4-5<br>E / O / P                                                                                                                      | ISO 2/6H<br>HSSE<br>R35<br>C / 2-3<br>E / O / P                                                                                                                                                     | ISO 2/6H<br>GLT-201<br>HSSE<br>R45<br>C / 2-3<br>E / O                                                                                                                                                  |            |
| max. 3 x d <sub>1</sub><br>                                                          |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        | max. 2,5 x d <sub>1</sub><br>                                                                                     | max. 2,5 x d <sub>1</sub><br>                                                                                       |            |
| P 1.1-4.1                                                                                                                                                              | P 1.1-4.1<br>M 1.1-4.1<br>N 2.2                                                                                                                                        | P 2.1-3.1<br>N 2.2, 2.5                                                                                                                                                | P 1.1-4.1                                                                                                                                                              | P 1.1-4.1<br>M 1.1-4.1<br>N 2.2                                                                                                                                        | P 1.1-3.1                                                                                                                                                                                           | M 1.1-2.1                                                                                                                                                                                               |            |
| Rekord<br>2B-VA<br>TIN                                                                                                                                                 | Rekord<br>2B-VA<br>GLT-1                                                                                                                                               | Rekord<br>2B-VA<br>NT                                                                                                                                                  | Rekord<br>2B-VA<br>TIN                                                                                                                                                 | Rekord<br>2B-VA<br>GLT-1                                                                                                                                               | Enorm 2<br>VA                                                                                                                                                                                       | Enorm 2<br>INOX<br>GLT-201                                                                                                                                                                              |            |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        | C0503000.0229                                                                                                                                                                                       | C050J300.0229                                                                                                                                                                                           | M 6 x 0,5  |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 6 x 0,75   |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 8 x 0,75   |
| C0203110.0251                                                                                                                                                          | C020C310.0251                                                                                                                                                          | C0203020.0251                                                                                                                                                          | C0203120.0251                                                                                                                                                          | C020C320.0251                                                                                                                                                          | C0503000.0251                                                                                                                                                                                       | C050J300.0251                                                                                                                                                                                           | 8 x 1      |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 9 x 1      |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 10 x 0,75  |
| C0203110.0276                                                                                                                                                          | C020C310.0276                                                                                                                                                          | C0203020.0276                                                                                                                                                          | C0203120.0276                                                                                                                                                          | C020C320.0276                                                                                                                                                          | C0503000.0276                                                                                                                                                                                       | C050J300.0276                                                                                                                                                                                           | 10 x 1     |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 10 x 1,25  |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 11 x 1     |
| C0203110.0301                                                                                                                                                          | C020C310.0301                                                                                                                                                          | C0203020.0301                                                                                                                                                          | C0203120.0301                                                                                                                                                          | C020C320.0301                                                                                                                                                          | C0503000.0301                                                                                                                                                                                       | C050J300.0301                                                                                                                                                                                           | 12 x 1     |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 12 x 1,25  |
| C0203110.0303                                                                                                                                                          | C020C310.0303                                                                                                                                                          | C0203020.0303                                                                                                                                                          | C0203120.0303                                                                                                                                                          | C020C320.0303                                                                                                                                                          | C0503000.0303                                                                                                                                                                                       | C050J300.0303                                                                                                                                                                                           | 12 x 1,5   |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 14 x 1     |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 14 x 1,25  |
| C0203110.0331                                                                                                                                                          | C020C310.0331                                                                                                                                                          | C0203020.0331                                                                                                                                                          | C0203120.0331                                                                                                                                                          | C020C320.0331                                                                                                                                                          | C0503000.0331                                                                                                                                                                                       | C050J300.0331                                                                                                                                                                                           | 14 x 1,5   |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 15 x 1     |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 16 x 1     |
| C0203110.0359                                                                                                                                                          | C020C310.0359                                                                                                                                                          | C0203020.0359                                                                                                                                                          | C0203120.0359                                                                                                                                                          | C020C320.0359                                                                                                                                                          | C0503000.0359                                                                                                                                                                                       | C050J300.0359                                                                                                                                                                                           | 16 x 1,5   |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 18 x 1     |
| C0203110.0390                                                                                                                                                          | C020C310.0390                                                                                                                                                          | C0203020.0390                                                                                                                                                          | C0203120.0390                                                                                                                                                          | C020C320.0390                                                                                                                                                          | C0503000.0390                                                                                                                                                                                       | C050J300.0390                                                                                                                                                                                           | 18 x 1,5   |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 18 x 2     |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 20 x 1     |
| C0203110.0422                                                                                                                                                          | C020C310.0422                                                                                                                                                          | C0203020.0422                                                                                                                                                          | C0203120.0422                                                                                                                                                          | C020C320.0422                                                                                                                                                          | C0503000.0422                                                                                                                                                                                       | C050J300.0422                                                                                                                                                                                           | 20 x 1,5   |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 20 x 2     |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 22 x 1     |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        | C0503000.0438                                                                                                                                                                                       | C050J300.0438                                                                                                                                                                                           | 22 x 1,5   |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 22 x 2     |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 24 x 1     |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        | C0503000.0452                                                                                                                                                                                       | C050J300.0452                                                                                                                                                                                           | 24 x 1,5   |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 24 x 2     |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 25 x 1,5   |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 26 x 1,5   |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 27 x 1,5   |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 27 x 2     |
|                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                     |                                                                                                                                                                                                         | 28 x 1,5   |

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

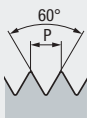
SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

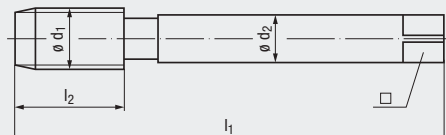
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MF

DIN 13



DIN  
374



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

GG  
Cast iron



GJV  
Cast iron  
vermicular



6HX  
NT  
HSSE

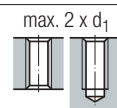
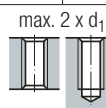
6HX  
TICN  
HSSE

6HX  
TICN  
HSSE-PM

C / 2-3  
E

C / 2-3  
E

C / 2-3  
E

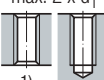
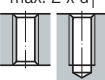
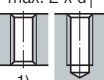
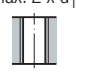
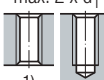


K 1.1-1.2

K 1.1-1.2

K 1.1-4.2

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |  | Rekord<br>2A-GG<br>NT | Rekord<br>2A-GG<br>TICN | Rekord<br>2A-GJV<br>PM-TICN |
|------------------------|---------|----------------|----------------|------------------|------|--|-----------------------|-------------------------|-----------------------------|
| <b>M</b>               |         |                |                |                  |      |  |                       |                         |                             |
| 6 x 0,5                | 80      | 13             | 4,5            | 3,4              | 5,5  |  |                       |                         |                             |
| 6 x 0,75               | 80      | 13             | 4,5            | 3,4              | 5,2  |  |                       |                         |                             |
| 8 x 0,75               | 80      | 14             | 6              | 4,9              | 7,2  |  |                       |                         |                             |
| 8 x 1                  | 90      | 17             | 6              | 4,9              | 7    |  |                       |                         |                             |
| 9 x 1                  | 90      | 17             | 7              | 5,5              | 8    |  | C0102001.0251         | C0109201.0251           |                             |
| 10 x 0,75              | 90      | 18             | 7              | 5,5              | 9,2  |  |                       |                         |                             |
| 10 x 1                 | 90      | 18             | 7              | 5,5              | 9    |  | C0102001.0276         | C0109201.0276           |                             |
| 10 x 1,25              | 100     | 22             | 7              | 5,5              | 8,8  |  |                       |                         |                             |
| 11 x 1                 | 90      | 18             | 8              | 6,2              | 10   |  |                       |                         |                             |
| 12 x 1                 | 100     | 18             | 9              | 7                | 11   |  | C0102001.0301         | C0109201.0301           |                             |
| 12 x 1,25              | 100     | 22             | 9              | 7                | 10,8 |  |                       |                         |                             |
| 12 x 1,5               | 100     | 22             | 9              | 7                | 10,5 |  | C0102001.0303         | C0109201.0303           | C010R501.0303               |
| 14 x 1                 | 100     | 18             | 11             | 9                | 13   |  |                       |                         |                             |
| 14 x 1,25              | 100     | 22             | 11             | 9                | 12,8 |  |                       |                         |                             |
| 14 x 1,5               | 100     | 22             | 11             | 9                | 12,5 |  | C0102001.0331         | C0109201.0331           | C010R501.0331               |
| 15 x 1                 | 100     | 18             | 12             | 9                | 14   |  |                       |                         |                             |
| 16 x 1                 | 100     | 18             | 12             | 9                | 15   |  |                       |                         |                             |
| 16 x 1,5               | 100     | 22             | 12             | 9                | 14,5 |  | C0102001.0359         | C0109201.0359           | C010R501.0359               |
| 18 x 1                 | 110     | 20             | 14             | 11               | 17   |  |                       |                         |                             |
| 18 x 1,5               | 110     | 25             | 14             | 11               | 16,5 |  | C0102001.0390         | C0109201.0390           | C010R501.0390               |
| 18 x 2                 | 125     | 26             | 14             | 11               | 16   |  |                       |                         |                             |
| 20 x 1                 | 125     | 20             | 16             | 12               | 19   |  |                       |                         |                             |
| 20 x 1,5               | 125     | 25             | 16             | 12               | 18,5 |  | C0102001.0422         | C0109201.0422           | C010R501.0422               |
| 20 x 2                 | 140     | 27             | 16             | 12               | 18   |  |                       |                         |                             |
| 22 x 1                 | 125     | 20             | 18             | 14,5             | 21   |  |                       |                         |                             |
| 22 x 1,5               | 125     | 25             | 18             | 14,5             | 20,5 |  |                       |                         |                             |
| 22 x 2                 | 140     | 27             | 18             | 14,5             | 20   |  |                       |                         |                             |
| 24 x 1                 | 140     | 20             | 18             | 14,5             | 23   |  |                       |                         |                             |
| 24 x 1,5               | 140     | 27             | 18             | 14,5             | 22,5 |  |                       |                         |                             |
| 24 x 2                 | 140     | 27             | 18             | 14,5             | 22   |  |                       |                         |                             |
| 25 x 1,5               | 140     | 28             | 18             | 14,5             | 23,5 |  |                       |                         |                             |
| 26 x 1,5               | 140     | 28             | 18             | 14,5             | 24,5 |  |                       |                         |                             |
| 27 x 1,5               | 140     | 28             | 20             | 16               | 25,5 |  |                       |                         |                             |
| 27 x 2                 | 140     | 28             | 20             | 16               | 25   |  |                       |                         |                             |
| 28 x 1,5               | 140     | 28             | 20             | 16               | 26,5 |  |                       |                         |                             |

| GJV<br>Cast iron<br>vermicular                                                                                |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   |           |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---|-----------|
|                              |                              |                              |                              |                              |                               |  |   |           |
|                              |                              |                              |                              |                              |                               |  |   |           |
| 6HX<br>TICN<br>HSSE-PM                                                                                        | 6HX<br>TICN<br>HSSE-PM                                                                                        | 6HX<br>TICN<br>HSSE-PM                                                                                        | 6HX<br>TICN<br>HSSE-PM                                                                                        | 6HX<br>TICN<br>HSSE-PM                                                                                        | 6HX<br>TICN<br>KHM                                                                                             | 6HX<br>TICN<br>KHM                                                                  |   |           |
| C / 2-3<br>E                                                                                                  | C / 2-3<br>E                                                                                                  | E / 1,5-2<br>E                                                                                                | E / 1,5-2<br>E                                                                                                | E / 1,5-2<br>E                                                                                                | C / 2-3<br>E                                                                                                   | E / 1,5-2<br>E                                                                      |   |           |
| max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> | max. 2 x d <sub>1</sub><br> |                                                                                     |   |           |
| K 1.1-4.2                                                                                                     | K 1.1-4.2                                                                                                     | K 1.1-4.2                                                                                                     | K 1.1-4.2                                                                                                     | K 1.1-4.2                                                                                                     | K 1.1-4.2                                                                                                      | K 1.1-4.2                                                                           |   |           |
| Rekord<br>2A-GJV-1KZ<br>PM-TICN                                                                               | Rekord<br>2A-GJV-1KZN<br>PM-TICN                                                                              | Rekord<br>2A-GJV/E<br>PM-TICN                                                                                 | Rekord<br>2A-GJV/E-1KZ<br>PM-TICN                                                                             | Rekord<br>2A-GJV/E-1KZN<br>PM-TICN                                                                            | KHM-Rekord<br>2A-GJV-1KZ<br>TICN                                                                               | KHM-Rekord<br>2A-GJV/E-1KZ<br>TICN                                                  |   |           |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     | M | 6 x 0,5   |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 6 x 0,75  |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 8 x 0,75  |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 8 x 1     |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 9 x 1     |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 10 x 0,75 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 10 x 1    |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 10 x 1,25 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 11 x 1    |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 12 x 1    |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 12 x 1,25 |
| C195R501.0303                                                                                                 | C106R501.0303                                                                                                 | C011R501.0303                                                                                                 | C196R501.0303                                                                                                 | C109R501.0303                                                                                                 | C1951P01.0303                                                                                                  | C1961P01.0303                                                                       |   | 12 x 1,5  |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 14 x 1    |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 14 x 1,25 |
| C195R501.0331                                                                                                 | C106R501.0331                                                                                                 | C011R501.0331                                                                                                 | C196R501.0331                                                                                                 | C109R501.0331                                                                                                 | C1951P01.0331                                                                                                  | C1961P01.0331                                                                       |   | 14 x 1,5  |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 15 x 1    |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 16 x 1    |
| C195R501.0359                                                                                                 | C106R501.0359                                                                                                 | C011R501.0359                                                                                                 | C196R501.0359                                                                                                 | C109R501.0359                                                                                                 | C1951P01.0359                                                                                                  | C1961P01.0359                                                                       |   | 16 x 1,5  |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 18 x 1    |
| C195R501.0390                                                                                                 | C106R501.0390                                                                                                 | C011R501.0390                                                                                                 | C196R501.0390                                                                                                 | C109R501.0390                                                                                                 | C1951P01.0390                                                                                                  | C1961P01.0390                                                                       |   | 18 x 1,5  |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 18 x 2    |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 20 x 1    |
| C195R501.0422                                                                                                 | C106R501.0422                                                                                                 | C011R501.0422                                                                                                 | C196R501.0422                                                                                                 | C109R501.0422                                                                                                 | C1951P01.0422                                                                                                  | C1961P01.0422                                                                       |   | 20 x 1,5  |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 20 x 2    |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 22 x 1    |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 22 x 1,5  |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 22 x 2    |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 24 x 1    |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 24 x 1,5  |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 24 x 2    |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 25 x 1,5  |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 26 x 1,5  |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 27 x 1,5  |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 27 x 2    |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                               |                                                                                                                |                                                                                     |   | 28 x 1,5  |

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

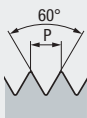
Tr, Tr-F  
RdZubehör  
Accessories



|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MF

DIN 13



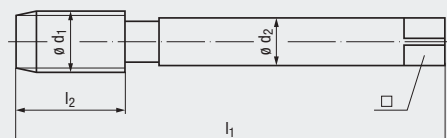
DIN  
374

**AL**  
Aluminium  
wrought alloys



l<sub>2</sub> ≈ 10 x P

**H**  
Materials of high  
tensile strength



Technische Informationen  
Technical information

ISO 2/6H

HSSE

R35

C / 2-3

E / O

6HX

NT

HSSE

C / 2-3

E / O / P

6HX

TICN

HSSE

C / 2-3

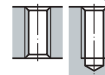
E / O / P

Gewindetiefe und Lochform  
Thread depth and hole type

max. 2,5 x d<sub>1</sub>



max. 2 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

» 78

**N** 1.4

**K** 1.1-4.2

**N** 4.1

**K** 1.1-4.2

**N** 1.5-1.6, 2.6

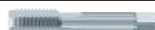
**N** 4.1, 5.1

| Ø d <sub>1</sub><br>mm | P<br>mm   | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |         | Enorm<br>2-AL        | Rekord<br>2A-H<br>NT | Rekord<br>2A-H<br>TICN |
|------------------------|-----------|----------------|----------------|------------------|------|---------|----------------------|----------------------|------------------------|
| <b>M</b>               | 6 x 0,5   | 80             | 13             | 4,5              | 3,4  | 5,5     |                      |                      |                        |
|                        | 6 x 0,75  | 80             | 13             | 4,5              | 3,4  | 5,2     |                      |                      |                        |
|                        | 8 x 0,75  | 80             | 14             | 6                | 4,9  | 7,2     |                      | C0100501.0250        |                        |
|                        | 8 x 1     | 90             | 17             | 6                | 4,9  | 7       |                      | <b>C0100501.0251</b> | <b>C0109101.0251</b>   |
|                        | 9 x 1     | 90             | 17             | 7                | 5,5  | 8       |                      | C0100501.0263        |                        |
|                        | 10 x 0,75 | 90             | 18             | 7                | 5,5  | 9,2     |                      |                      |                        |
|                        | 10 x 1    | 90             | 18             | 7                | 5,5  | 9       |                      | <b>C0100501.0276</b> | <b>C0109101.0276</b>   |
|                        | 10 x 1,25 | 100            | 22             | 7                | 5,5  | 8,8     |                      | <b>C0100501.0277</b> | <b>C0109101.0277</b>   |
|                        | 11 x 1    | 90             | 18             | 8                | 6,2  | 10      |                      |                      |                        |
|                        | 12 x 1    | 100            | 18             | 9                | 7    | 11      |                      | <b>C0100501.0301</b> | <b>C0109101.0301</b>   |
|                        | 12 x 1,25 | 100            | 22             | 9                | 7    | 10,8    |                      | C0100501.0302        |                        |
|                        | 12 x 1,5  | 100            | 22             | 9                | 7    | 10,5 2) | <b>C0504500.0303</b> | <b>C0100501.0303</b> | <b>C0109101.0303</b>   |
|                        | 14 x 1    | 100            | 18             | 11               | 9    | 13      |                      |                      |                        |
|                        | 14 x 1,25 | 100            | 22             | 11               | 9    | 12,8    |                      | C0100501.0330        |                        |
|                        | 14 x 1,5  | 100            | 22             | 11               | 9    | 12,5 2) | <b>C0504500.0331</b> | <b>C0100501.0331</b> | <b>C0109101.0331</b>   |
|                        | 15 x 1    | 100            | 18             | 12               | 9    | 14      |                      | C0100501.0343        |                        |
|                        | 16 x 1    | 100            | 18             | 12               | 9    | 15      |                      | C0100501.0357        |                        |
|                        | 16 x 1,5  | 100            | 22             | 12               | 9    | 14,5 2) | <b>C0504500.0359</b> | <b>C0100501.0359</b> | <b>C0109101.0359</b>   |
|                        | 18 x 1    | 110            | 20             | 14               | 11   | 17      |                      |                      |                        |
|                        | 18 x 1,5  | 110            | 25             | 14               | 11   | 16,5    |                      | <b>C0100501.0390</b> | <b>C0109101.0390</b>   |
|                        | 18 x 2    | 125            | 26             | 14               | 11   | 16      |                      | C0100501.0391        |                        |
|                        | 20 x 1    | 125            | 20             | 16               | 12   | 19      |                      | C0100501.0420        |                        |
|                        | 20 x 1,5  | 125            | 25             | 16               | 12   | 18,5    |                      | <b>C0100501.0422</b> | <b>C0109101.0422</b>   |
|                        | 20 x 2    | 140            | 27             | 16               | 12   | 18      |                      |                      |                        |
|                        | 22 x 1    | 125            | 20             | 18               | 14,5 | 21      |                      |                      |                        |
|                        | 22 x 1,5  | 125            | 25             | 18               | 14,5 | 20,5    |                      | <b>C0100501.0438</b> | <b>C0109101.0438</b>   |
|                        | 22 x 2    | 140            | 27             | 18               | 14,5 | 20      |                      |                      |                        |
|                        | 24 x 1    | 140            | 20             | 18               | 14,5 | 23      |                      | C0100501.0450        |                        |
|                        | 24 x 1,5  | 140            | 27             | 18               | 14,5 | 22,5    |                      | <b>C0100501.0452</b> | <b>C0109101.0452</b>   |
|                        | 24 x 2    | 140            | 27             | 18               | 14,5 | 22      |                      | C0100501.0453        |                        |

DIN 371

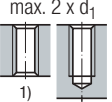
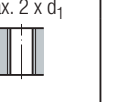
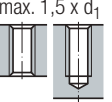


DIN 2181



163

2) Vorbohrdurchmesser für Gewindebohrer Rekord 2A-HCUT-PM-TICN um 0,2 mm anheben  
Increase drill diameter for taps Rekord 2A-HCUT-PM-TICN by 0.2 mm

| H<br>Materials of high<br>tensile strength                                                                    |                                                                                   |                                                                                                               |                                                                                   | HCUT<br>Hardened<br>steels                                                                                       |     |  |           |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----|--|-----------|
|                              |  |                              |  |                                 |     |  |           |
| 6HX<br>NT<br>HSSE                                                                                             | 6HX<br>TICN<br>HSSE                                                               | 6HX<br>TICN<br>HSSE                                                                                           | 6HX<br>KHM                                                                        | 6HX<br>TICN<br>HSSE-PM                                                                                           |     |  |           |
| C / 2-3<br>E / O                                                                                              | C / 2-3<br>E / O                                                                  | C / 2-3<br>E / O                                                                                              | C / 2-3<br>E / O                                                                  | C / 2-3<br>O / P                                                                                                 |     |  |           |
| max. 2 x d <sub>1</sub><br> |                                                                                   | max. 2 x d <sub>1</sub><br> |                                                                                   | max. 1,5 x d <sub>1</sub><br> |     |  |           |
| K 1.1-4.2<br>N 4.1                                                                                            | K 1.1-4.2<br>N 1.5-1.6, 2.6<br>N 4.1, 5.1                                         | K 1.1-4.2<br>N 1.5-1.6, 2.6<br>N 4.1, 5.1                                                                     | K 1.1-4.2<br>N 1.5-1.6<br>N 2.6-2.8<br>N 4.1, 4.3-4.4<br>N 5.1-5.2                | H 1.1-1.2                                                                                                        |     |  |           |
| Rekord<br>2A-H-IKZ<br>NT                                                                                      | Rekord<br>2A-H-IKZ<br>TICN                                                        | Rekord<br>2A-H-IKZN<br>TICN                                                                                   | KHM-Rekord<br>2A-H-IKZ                                                            | Rekord<br>2A-HCUT<br>PM-TICN                                                                                     |     |  |           |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | M 6 x 0,5 |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 6 x 0,75  |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 8 x 0,75  |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 8 x 1     |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 9 x 1     |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 10 x 0,75 |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 10 x 1    |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 10 x 1,25 |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 11 x 1    |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 12 x 1    |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 12 x 1,25 |
| C1950501.0303                                                                                                 | C1959101.0303                                                                     | C1069101.0303                                                                                                 | C1950901.0303                                                                     | C010J901.0303                                                                                                    |     |  | 12 x 1,5  |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 14 x 1    |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 14 x 1,25 |
| C1950501.0331                                                                                                 | C1959101.0331                                                                     | C1069101.0331                                                                                                 | C1950901.0331                                                                     | C010J901.0331                                                                                                    |     |  | 14 x 1,5  |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 15 x 1    |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 16 x 1    |
| C1950501.0359                                                                                                 | C1959101.0359                                                                     | C1069101.0359                                                                                                 | C1950901.0359                                                                     | C010J901.0359                                                                                                    |     |  | 16 x 1,5  |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 18 x 1    |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 18 x 1,5  |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 18 x 2    |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 20 x 1    |
| C1950501.0422                                                                                                 | C1959101.0422                                                                     | C1069101.0422                                                                                                 | C1950901.0422                                                                     |                                                                                                                  |     |  | 20 x 1,5  |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 20 x 2    |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 22 x 1    |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 22 x 1,5  |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 22 x 2    |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 24 x 1    |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 24 x 1,5  |
|                                                                                                               |                                                                                   |                                                                                                               |                                                                                   |                                                                                                                  |     |  | 24 x 2    |
|                                                                                                               |                                                                                   |                                                                                                               | 163                                                                               |                                                                                                                  | 164 |  |           |

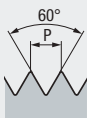
1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication



|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

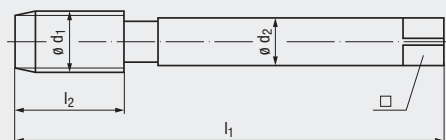
# MF

DIN 13



DIN  
374

**Z**  
CNC-controlled  
machines



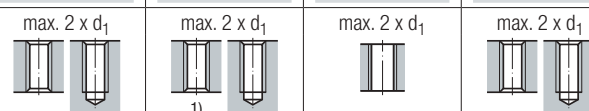
Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

|           |         |         |           |
|-----------|---------|---------|-----------|
| 6HX       | 6HX     | 6HX     | 6HX       |
| TICN      | TICN    | TICN    | TICN      |
| HSSE      | HSSE    | HSSE    | HSSE      |
| C / 2-3   | C / 2-3 | C / 2-3 | E / 1,5-2 |
| E / 0 / P | E / 0   | E / 0   | E / 0 / P |



|                       |                       |                       |                       |
|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>K</b> 1.1-4.2      | <b>K</b> 1.1-4.2      | <b>K</b> 1.1-4.2      | <b>K</b> 1.1-4.2      |
| <b>N</b> 1.5-1.6, 2.6 | <b>N</b> 1.5-1.6, 2.6 | <b>N</b> 1.5-1.6, 2.6 | <b>N</b> 1.5-1.6, 2.6 |
| <b>N</b> 4.1          | <b>N</b> 4.1          | <b>N</b> 4.1          | <b>N</b> 4.1          |

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |  | Rekord<br>2A-Z<br>TICN | Rekord<br>2A-Z-1KZ<br>TICN | Rekord<br>2A-Z-1KZN<br>TICN | Rekord<br>2A-Z/E<br>TICN |
|------------------------|---------|----------------|----------------|------------------|------|--|------------------------|----------------------------|-----------------------------|--------------------------|
| <b>M</b> 6 x 0,5       | 80      | 5              | 4,5            | 3,4              | 5,5  |  |                        |                            |                             |                          |
| 6 x 0,75               | 80      | 8              | 4,5            | 3,4              | 5,2  |  |                        |                            |                             |                          |
| 8 x 0,75               | 80      | 8              | 6              | 4,9              | 7,2  |  |                        |                            |                             |                          |
| 8 x 1                  | 90      | 10             | 6              | 4,9              | 7    |  | <b>C0109401.0251</b>   | <b>C1959401.0251</b>       | C1069401.0251               | <b>C0119401.0251</b>     |
| 9 x 1                  | 90      | 10             | 7              | 5,5              | 8    |  |                        |                            |                             |                          |
| 10 x 0,75              | 90      | 10             | 7              | 5,5              | 9,2  |  |                        |                            |                             |                          |
| 10 x 1                 | 90      | 10             | 7              | 5,5              | 9    |  | <b>C0109401.0276</b>   | <b>C1959401.0276</b>       | C1069401.0276               | <b>C0119401.0276</b>     |
| 10 x 1,25              | 100     | 16             | 7              | 5,5              | 8,8  |  | <b>C0109401.0277</b>   | <b>C1959401.0277</b>       | C1069401.0277               | <b>C0119401.0277</b>     |
| 11 x 1                 | 90      | 11             | 8              | 6,2              | 10   |  |                        |                            |                             |                          |
| 12 x 1                 | 100     | 11             | 9              | 7                | 11   |  |                        |                            |                             |                          |
| 12 x 1,25              | 100     | 15             | 9              | 7                | 10,8 |  |                        |                            |                             |                          |
| 12 x 1,5               | 100     | 15             | 9              | 7                | 10,5 |  | <b>C0109401.0303</b>   | <b>C1959401.0303</b>       | C1069401.0303               | <b>C0119401.0303</b>     |
| 14 x 1                 | 100     | 11             | 11             | 9                | 13   |  |                        |                            |                             |                          |
| 14 x 1,25              | 100     | 15             | 11             | 9                | 12,8 |  |                        |                            |                             |                          |
| 14 x 1,5               | 100     | 15             | 11             | 9                | 12,5 |  | <b>C0109401.0331</b>   | <b>C1959401.0331</b>       | C1069401.0331               | <b>C0119401.0331</b>     |
| 15 x 1                 | 100     | 12             | 12             | 9                | 14   |  |                        |                            |                             |                          |
| 16 x 1                 | 100     | 12             | 12             | 9                | 15   |  |                        |                            |                             |                          |
| 16 x 1,5               | 100     | 15             | 12             | 9                | 14,5 |  | <b>C0109401.0359</b>   | <b>C1959401.0359</b>       | C1069401.0359               | <b>C0119401.0359</b>     |
| 18 x 1                 | 110     | 13             | 14             | 11               | 17   |  |                        |                            |                             |                          |
| 18 x 1,5               | 110     | 17             | 14             | 11               | 16,5 |  |                        |                            |                             |                          |
| 18 x 2                 | 125     | 20             | 14             | 11               | 16   |  |                        |                            |                             |                          |
| 20 x 1                 | 125     | 14             | 16             | 12               | 19   |  |                        |                            |                             |                          |
| 20 x 1,5               | 125     | 17             | 16             | 12               | 18,5 |  |                        |                            |                             |                          |
| 20 x 2                 | 140     | 20             | 16             | 12               | 18   |  |                        |                            |                             |                          |
| 22 x 1                 | 125     | 14             | 18             | 14,5             | 21   |  |                        |                            |                             |                          |
| 22 x 1,5               | 125     | 17             | 18             | 14,5             | 20,5 |  |                        |                            |                             |                          |
| 22 x 2                 | 140     | 20             | 18             | 14,5             | 20   |  |                        |                            |                             |                          |
| 24 x 1                 | 140     | 15             | 18             | 14,5             | 23   |  |                        |                            |                             |                          |
| 24 x 1,5               | 140     | 20             | 18             | 14,5             | 22,5 |  |                        |                            |                             |                          |
| 24 x 2                 | 140     | 20             | 18             | 14,5             | 22   |  |                        |                            |                             |                          |
| DIN 371                |         |                |                |                  |      |  |                        |                            |                             |                          |
| DIN 2181               |         |                |                |                  |      |  |                        |                            |                             |                          |

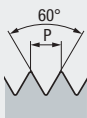
1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication



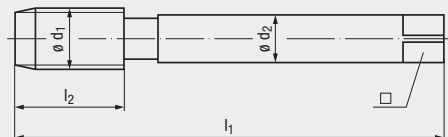
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| <b>MF</b>              |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MF

DIN 13



DIN  
374



**Z**  
CNC-controlled  
machines



Technische Informationen  
Technical information

6HX  
TIN  
HSSE  
R15  
**E / 1,5-2**  
E / 0

6HX  
TIN  
HSSE  
R15  
**C / 2-3**  
E / 0

6HX  
TIN  
HSSE  
R15  
**E / 1,5-2**  
E / 0

Gewindetiefe und Lochform  
Thread depth and hole type

max. 2 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

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**P** 3.1-5.1  
**N** 2.4-2.5

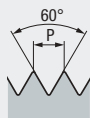
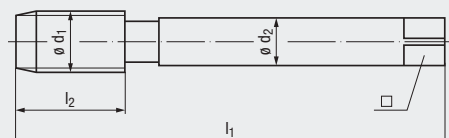
**P** 3.1-5.1  
**N** 2.4-2.5

**P** 3.1-5.1  
**N** 2.4-2.5

|          | Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |                      | Rekord<br>2D-Z/E-1KZ<br>TIN | Rekord<br>2D-Z-BF<br>1KZ-TIN | Rekord<br>2D-Z/E-BF<br>1KZ-TIN |
|----------|------------------------|---------|----------------|----------------|------------------|------|----------------------|-----------------------------|------------------------------|--------------------------------|
| <b>M</b> | 6 x 0,5                | 80      | 5              | 4,5            | 3,4              | 5,5  |                      |                             |                              |                                |
|          | 6 x 0,75               | 80      | 8              | 4,5            | 3,4              | 5,2  |                      |                             |                              |                                |
|          | 8 x 0,75               | 80      | 8              | 6              | 4,9              | 7,2  |                      |                             |                              |                                |
|          | 8 x 1                  | 90      | 10             | 6              | 4,9              | 7    | <b>C0983701.0251</b> | <b>C4253701.0251</b>        | <b>C4053701.0251</b>         |                                |
|          | 9 x 1                  | 90      | 10             | 7              | 5,5              | 8    |                      |                             |                              |                                |
|          | 10 x 0,75              | 90      | 10             | 7              | 5,5              | 9,2  |                      |                             |                              |                                |
|          | 10 x 1                 | 90      | 10             | 7              | 5,5              | 9    | <b>C0983701.0276</b> | <b>C4253701.0276</b>        | <b>C4053701.0276</b>         |                                |
|          | 10 x 1,25              | 100     | 16             | 7              | 5,5              | 8,8  | <b>C0983701.0277</b> | <b>C4253701.0277</b>        | <b>C4053701.0277</b>         |                                |
|          | 11 x 1                 | 90      | 11             | 8              | 6,2              | 10   |                      |                             |                              |                                |
|          | 12 x 1                 | 100     | 11             | 9              | 7                | 11   |                      |                             |                              |                                |
|          | 12 x 1,25              | 100     | 15             | 9              | 7                | 10,8 |                      |                             |                              |                                |
|          | 12 x 1,5               | 100     | 15             | 9              | 7                | 10,5 | <b>C0983701.0303</b> | <b>C4253701.0303</b>        | <b>C4053701.0303</b>         |                                |
|          | 14 x 1                 | 100     | 11             | 11             | 9                | 13   |                      |                             |                              |                                |
|          | 14 x 1,25              | 100     | 15             | 11             | 9                | 12,8 |                      |                             |                              |                                |
|          | 14 x 1,5               | 100     | 15             | 11             | 9                | 12,5 | <b>C0983701.0331</b> | <b>C4253701.0331</b>        | <b>C4053701.0331</b>         |                                |
|          | 15 x 1                 | 100     | 12             | 12             | 9                | 14   |                      |                             |                              |                                |
|          | 16 x 1                 | 100     | 12             | 12             | 9                | 15   |                      |                             |                              |                                |
|          | 16 x 1,5               | 100     | 15             | 12             | 9                | 14,5 | <b>C0983701.0359</b> | <b>C4253701.0359</b>        | <b>C4053701.0359</b>         |                                |
|          | 18 x 1                 | 110     | 13             | 14             | 11               | 17   |                      |                             |                              |                                |
|          | 18 x 1,5               | 110     | 17             | 14             | 11               | 16,5 |                      |                             |                              |                                |
|          | 18 x 2                 | 125     | 20             | 14             | 11               | 16   |                      |                             |                              |                                |
|          | 20 x 1                 | 125     | 14             | 16             | 12               | 19   |                      |                             |                              |                                |
|          | 20 x 1,5               | 125     | 17             | 16             | 12               | 18,5 |                      |                             |                              |                                |
|          | 20 x 2                 | 140     | 20             | 16             | 12               | 18   |                      |                             |                              |                                |
|          | 22 x 1                 | 125     | 14             | 18             | 14,5             | 21   |                      |                             |                              |                                |
|          | 22 x 1,5               | 125     | 17             | 18             | 14,5             | 20,5 |                      |                             |                              |                                |
|          | 22 x 2                 | 140     | 20             | 18             | 14,5             | 20   |                      |                             |                              |                                |
|          | 24 x 1                 | 140     | 15             | 18             | 14,5             | 23   |                      |                             |                              |                                |
|          | 24 x 1,5               | 140     | 20             | 18             | 14,5             | 22,5 |                      |                             |                              |                                |
|          | 24 x 2                 | 140     | 20             | 18             | 14,5             | 22   |                      |                             |                              |                                |

**MF**

DIN 13

DIN  
374Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

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|          |                        |         |                |                |                  |      |  | Z<br>CNC-controlled machines                           |                                                    |                                                          |                                                 |
|----------|------------------------|---------|----------------|----------------|------------------|------|--|--------------------------------------------------------|----------------------------------------------------|----------------------------------------------------------|-------------------------------------------------|
|          | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |  | 6HX<br>GLT-1<br>HSSE-PM<br>R45<br>C / 2-3<br>E / O / P | 6HX<br>GLT-1<br>HSSE-PM<br>R45<br>C / 2-3<br>E / O | 6HX<br>GLT-1<br>HSSE-PM<br>R45<br>E / 1,5-2<br>E / O / P | ISO 2/6H<br>HSSE<br>R45<br>C / 2-3<br>E / O / P |
| <b>M</b> | 4 x 0,5                | 63      | 5              | 2,8            | 2,1              | 3,5  |  |                                                        |                                                    |                                                          |                                                 |
|          | 5 x 0,5                | 70      | 5              | 3,5            | 2,7              | 4,5  |  |                                                        |                                                    |                                                          |                                                 |
|          | 6 x 0,5                | 80      | 5              | 4,5            | 3,4              | 5,5  |  |                                                        |                                                    |                                                          |                                                 |
|          | 6 x 0,75               | 80      | 8              | 4,5            | 3,4              | 5,2  |  |                                                        |                                                    |                                                          |                                                 |
|          | 8 x 0,75               | 80      | 8              | 6              | 4,9              | 7,2  |  |                                                        |                                                    |                                                          |                                                 |
|          | 8 x 1                  | 90      | 10             | 6              | 4,9              | 7    |  |                                                        |                                                    |                                                          |                                                 |
|          | 9 x 1                  | 90      | 10             | 7              | 5,5              | 8    |  |                                                        |                                                    |                                                          |                                                 |
|          | 10 x 0,75              | 90      | 10             | 7              | 5,5              | 9,2  |  |                                                        |                                                    |                                                          |                                                 |
|          | 10 x 1                 | 90      | 10             | 7              | 5,5              | 9    |  |                                                        |                                                    |                                                          |                                                 |
|          | 10 x 1,25              | 100     | 16             | 7              | 5,5              | 8,8  |  |                                                        |                                                    |                                                          |                                                 |
|          | 11 x 1                 | 90      | 11             | 8              | 6,2              | 10   |  |                                                        |                                                    |                                                          |                                                 |
|          | 12 x 1                 | 100     | 11             | 9              | 7                | 11   |  |                                                        |                                                    |                                                          |                                                 |
|          | 12 x 1,25              | 100     | 15             | 9              | 7                | 10,8 |  |                                                        |                                                    |                                                          |                                                 |
|          | 12 x 1,5               | 100     | 15             | 9              | 7                | 10,5 |  |                                                        |                                                    |                                                          |                                                 |
|          | 14 x 1                 | 100     | 11             | 11             | 9                | 13   |  |                                                        |                                                    |                                                          |                                                 |
|          | 14 x 1,25              | 100     | 15             | 11             | 9                | 12,8 |  |                                                        |                                                    |                                                          |                                                 |
|          | 14 x 1,5               | 100     | 15             | 11             | 9                | 12,5 |  |                                                        |                                                    |                                                          |                                                 |
|          | 15 x 1                 | 100     | 12             | 12             | 9                | 14   |  |                                                        |                                                    |                                                          |                                                 |
|          | 16 x 1                 | 100     | 12             | 12             | 9                | 15   |  |                                                        |                                                    |                                                          |                                                 |
|          | 16 x 1,5               | 100     | 15             | 12             | 9                | 14,5 |  |                                                        |                                                    |                                                          |                                                 |
|          | 18 x 1                 | 110     | 13             | 14             | 11               | 17   |  |                                                        |                                                    |                                                          |                                                 |
|          | 18 x 1,5               | 110     | 17             | 14             | 11               | 16,5 |  |                                                        |                                                    |                                                          |                                                 |
|          | 18 x 2                 | 125     | 20             | 14             | 11               | 16   |  |                                                        |                                                    |                                                          |                                                 |
|          | 20 x 1                 | 125     | 14             | 16             | 12               | 19   |  |                                                        |                                                    |                                                          |                                                 |
|          | 20 x 1,5               | 125     | 17             | 16             | 12               | 18,5 |  |                                                        |                                                    |                                                          |                                                 |
|          | 20 x 2                 | 140     | 20             | 16             | 12               | 18   |  |                                                        |                                                    |                                                          |                                                 |
|          | 22 x 1                 | 125     | 14             | 18             | 14,5             | 21   |  |                                                        |                                                    |                                                          |                                                 |
|          | 22 x 1,5               | 125     | 17             | 18             | 14,5             | 20,5 |  |                                                        |                                                    |                                                          |                                                 |
|          | 22 x 2                 | 140     | 20             | 18             | 14,5             | 20   |  |                                                        |                                                    |                                                          |                                                 |
|          | 24 x 1                 | 140     | 15             | 18             | 14,5             | 23   |  |                                                        |                                                    |                                                          |                                                 |
|          | 24 x 1,5               | 140     | 20             | 18             | 14,5             | 22,5 |  |                                                        |                                                    |                                                          |                                                 |
|          | 24 x 2                 | 140     | 20             | 18             | 14,5             | 22   |  |                                                        |                                                    |                                                          |                                                 |
|          | 25 x 1,5               | 140     | 20             | 18             | 14,5             | 23,5 |  |                                                        |                                                    |                                                          |                                                 |
|          | 26 x 1,5               | 140     | 20             | 18             | 14,5             | 24,5 |  |                                                        |                                                    |                                                          |                                                 |
| DIN 371  |                        |         |                |                |                  |      |  |                                                        |                                                    |                                                          | 166                                             |
| DIN 2181 |                        |         |                |                |                  |      |  |                                                        |                                                    |                                                          |                                                 |

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

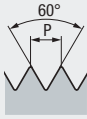
SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

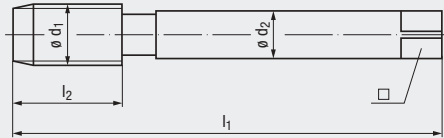
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MF

DIN 13



DIN  
374



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

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max. 3 x d<sub>1</sub>



|                       |                       |                       |                  |
|-----------------------|-----------------------|-----------------------|------------------|
| <b>P</b> 1.1-4.1      | <b>P</b> 1.1-4.1      | <b>P</b> 1.1-4.1      | <b>P</b> 1.1-3.1 |
| <b>M</b> 1.1-4.1      | <b>M</b> 1.1-4.1      | <b>M</b> 1.1-4.1      |                  |
| <b>K</b> 1.1-3.2      | <b>K</b> 1.1-3.2      | <b>K</b> 1.1-3.2      |                  |
| <b>N</b> 1.4, 2.1-2.2 | <b>N</b> 1.4, 2.1-2.2 | <b>N</b> 1.4, 2.1-2.2 |                  |
| <b>N</b> 2.4-2.5      | <b>N</b> 2.4-2.5      | <b>N</b> 2.4-2.5      |                  |
| <b>S</b> 1.1          | <b>S</b> 1.1          | <b>S</b> 1.1          |                  |

|          | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □  |      | Enorm<br>2-Z<br>PM-GLT-1 | Enorm<br>2-Z-1KZ<br>PM-GLT-1 | Enorm<br>2-Z/E<br>PM-GLT-1 | Enorm<br>2-Z  |
|----------|------------------------|---------|----------------|----------------|------------------|----|------|--------------------------|------------------------------|----------------------------|---------------|
| <b>M</b> | 27                     | x 1,5   | 140            | 20             | 20               | 16 | 25,5 |                          |                              |                            | C0503500.0470 |
|          | 27                     | x 2     | 140            | 20             | 20               | 16 | 25   |                          |                              |                            | C0503500.0471 |
|          | 28                     | x 1,5   | 140            | 20             | 20               | 16 | 26,5 |                          |                              |                            | C0503500.0476 |
|          | 28                     | x 2     | 140            | 20             | 20               | 16 | 26   |                          |                              |                            | C0503500.0477 |
|          | 30                     | x 1,5   | 150            | 22             | 22               | 18 | 28,5 |                          |                              |                            |               |
|          | 30                     | x 2     | 150            | 22             | 22               | 18 | 28   |                          |                              |                            |               |
|          | 32                     | x 1,5   | 150            | 22             | 22               | 18 | 30,5 |                          |                              |                            |               |
|          | 32                     | x 2     | 150            | 22             | 22               | 18 | 30   |                          |                              |                            |               |
|          | 33                     | x 1,5   | 160            | 24             | 25               | 20 | 31,5 |                          |                              |                            |               |
|          | 33                     | x 2     | 160            | 24             | 25               | 20 | 31   |                          |                              |                            |               |
|          | 34                     | x 1,5   | 170            | 24             | 28               | 22 | 32,5 |                          |                              |                            |               |
|          | 35                     | x 1,5   | 170            | 24             | 28               | 22 | 33,5 |                          |                              |                            |               |
|          | 36                     | x 1,5   | 170            | 24             | 28               | 22 | 34,5 |                          |                              |                            |               |
|          | 36                     | x 2     | 170            | 24             | 28               | 22 | 34   |                          |                              |                            |               |
|          | 36                     | x 3     | 200            | 30             | 28               | 22 | 33   |                          |                              |                            |               |
|          | 38                     | x 1,5   | 170            | 24             | 28               | 22 | 36,5 |                          |                              |                            |               |
|          | 39                     | x 1,5   | 170            | 25             | 32               | 24 | 37,5 |                          |                              |                            |               |
|          | 39                     | x 2     | 170            | 25             | 32               | 24 | 37   |                          |                              |                            |               |
|          | 40                     | x 1,5   | 170            | 25             | 32               | 24 | 38,5 |                          |                              |                            |               |
|          | 40                     | x 2     | 170            | 25             | 32               | 24 | 38   |                          |                              |                            |               |
|          | 42                     | x 1,5   | 170            | 25             | 32               | 24 | 40,5 |                          |                              |                            |               |
|          | 42                     | x 2     | 170            | 25             | 32               | 24 | 40   |                          |                              |                            |               |
|          | 42                     | x 3     | 200            | 30             | 32               | 24 | 39   |                          |                              |                            |               |
|          | 45                     | x 1,5   | 180            | 27             | 36               | 29 | 43,5 |                          |                              |                            |               |
|          | 45                     | x 2     | 180            | 27             | 36               | 29 | 43   |                          |                              |                            |               |
|          | 45                     | x 3     | 200            | 30             | 36               | 29 | 42   |                          |                              |                            |               |
|          | 48                     | x 1,5   | 190            | 27             | 36               | 29 | 46,5 |                          |                              |                            |               |
|          | 48                     | x 2     | 190            | 27             | 36               | 29 | 46   |                          |                              |                            |               |
|          | 48                     | x 3     | 225            | 33             | 36               | 29 | 45   |                          |                              |                            |               |
|          | 50                     | x 1,5   | 190            | 27             | 36               | 29 | 48,5 |                          |                              |                            |               |
|          | 50                     | x 2     | 190            | 27             | 36               | 29 | 48   |                          |                              |                            |               |
|          | 52                     | x 1,5   | 190            | 27             | 40               | 32 | 50,5 |                          |                              |                            |               |
|          | 52                     | x 2     | 190            | 27             | 40               | 32 | 50   |                          |                              |                            |               |
|          | 52                     | x 3     | 225            | 33             | 40               | 32 | 49   |                          |                              |                            |               |

DIN 371

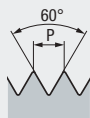
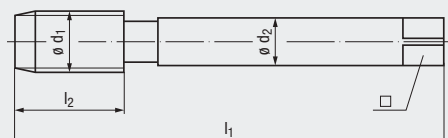
DIN 2181

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**MF**

DIN 13

DIN  
374Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

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max. 3 x d<sub>1</sub>

**P** 1.1-4.1  
**M** 1.1-4.1  
**N** 1.4, 2.1-2.2  
**N** 2.4-2.5  
**S** 1.1

**P** 1.1-3.1

**P** 1.1-4.1  
**N** 2.2, 2.4-2.5  
**S** 1.1

**P** 1.1-4.1  
**M** 1.1-4.1  
**N** 1.4, 2.1-2.2  
**N** 2.4-2.5  
**S** 1.1

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |      | Enorm<br>2-Z<br>GLT-1 | Enorm<br>2-Z/E       | Enorm<br>2-Z/E<br>TIN | Enorm<br>2-Z/E<br>GLT-1 |
|------------------------|---------|----------------|----------------|------------------|------|------|-----------------------|----------------------|-----------------------|-------------------------|
| <b>M</b> 8 x           | 0,75    | 80             | 8              | 6                | 4,9  | 7,2  |                       | <b>C050C400.0251</b> | <b>C0513500.0250</b>  | <b>C0513700.0251</b>    |
| 8 x                    | 1       | 90             | 10             | 6                | 4,9  | 7    |                       | <b>C0513500.0251</b> |                       | <b>C051C400.0251</b>    |
| 9 x                    | 1       | 90             | 10             | 7                | 5,5  | 8    |                       |                      |                       |                         |
| 10 x                   | 0,75    | 90             | 10             | 7                | 5,5  | 9,2  |                       |                      |                       |                         |
| 10 x                   | 1       | 90             | 10             | 7                | 5,5  | 9    | <b>C050C400.0276</b>  | <b>C0513500.0276</b> | <b>C0513700.0276</b>  | <b>C051C400.0276</b>    |
| 10 x                   | 1,25    | 100            | 16             | 7                | 5,5  | 8,8  |                       | C0513500.0277        |                       |                         |
| 11 x                   | 1       | 90             | 11             | 8                | 6,2  | 10   |                       |                      |                       |                         |
| 12 x                   | 1       | 100            | 11             | 9                | 7    | 11   | <b>C050C400.0301</b>  | <b>C0513500.0301</b> | <b>C0513700.0301</b>  | <b>C051C400.0301</b>    |
| 12 x                   | 1,25    | 100            | 15             | 9                | 7    | 10,8 |                       | C0513500.0302        | C0513700.0302         | C051C400.0302           |
| 12 x                   | 1,5     | 100            | 15             | 9                | 7    | 10,5 | <b>C050C400.0303</b>  | <b>C0513500.0303</b> | <b>C0513700.0303</b>  | <b>C051C400.0303</b>    |
| 14 x                   | 1       | 100            | 11             | 11               | 9    | 13   |                       | C0513500.0329        |                       |                         |
| 14 x                   | 1,25    | 100            | 15             | 11               | 9    | 12,8 |                       |                      |                       |                         |
| 14 x                   | 1,5     | 100            | 15             | 11               | 9    | 12,5 | <b>C050C400.0331</b>  | <b>C0513500.0331</b> | <b>C0513700.0331</b>  | <b>C051C400.0331</b>    |
| 15 x                   | 1       | 100            | 12             | 12               | 9    | 14   |                       | C0513500.0343        |                       |                         |
| 16 x                   | 1       | 100            | 12             | 12               | 9    | 15   |                       | C0513500.0357        |                       |                         |
| 16 x                   | 1,5     | 100            | 15             | 12               | 9    | 14,5 | <b>C050C400.0359</b>  | <b>C0513500.0359</b> | <b>C0513700.0359</b>  | <b>C051C400.0359</b>    |
| 18 x                   | 1       | 110            | 13             | 14               | 11   | 17   |                       | C0513500.0388        |                       |                         |
| 18 x                   | 1,5     | 110            | 17             | 14               | 11   | 16,5 | <b>C050C400.0390</b>  | <b>C0513500.0390</b> | <b>C0513700.0390</b>  | <b>C051C400.0390</b>    |
| 18 x                   | 2       | 125            | 20             | 14               | 11   | 16   |                       |                      |                       |                         |
| 20 x                   | 1       | 125            | 14             | 16               | 12   | 19   |                       | C0513500.0420        |                       |                         |
| 20 x                   | 1,5     | 125            | 17             | 16               | 12   | 18,5 | <b>C050C400.0422</b>  | <b>C0513500.0422</b> | <b>C0513700.0422</b>  | <b>C051C400.0422</b>    |
| 20 x                   | 2       | 140            | 20             | 16               | 12   | 18   |                       |                      |                       |                         |
| 22 x                   | 1       | 125            | 14             | 18               | 14,5 | 21   |                       |                      |                       |                         |
| 22 x                   | 1,5     | 125            | 17             | 18               | 14,5 | 20,5 |                       | C0513500.0438        | C0513700.0438         | C051C400.0438           |
| 22 x                   | 2       | 140            | 20             | 18               | 14,5 | 20   |                       |                      |                       |                         |
| 24 x                   | 1       | 140            | 15             | 18               | 14,5 | 23   |                       |                      |                       |                         |
| 24 x                   | 1,5     | 140            | 20             | 18               | 14,5 | 22,5 |                       | C0513500.0452        | C0513700.0452         | C051C400.0452           |
| 24 x                   | 2       | 140            | 20             | 18               | 14,5 | 22   | <b>C050C400.0453</b>  |                      |                       |                         |
| 25 x                   | 1,5     | 140            | 20             | 18               | 14,5 | 23,5 |                       |                      |                       |                         |
| 26 x                   | 1,5     | 140            | 20             | 18               | 14,5 | 24,5 |                       | C0513500.0464        | C0513700.0464         | C051C400.0464           |
| 27 x                   | 1,5     | 140            | 20             | 20               | 16   | 25,5 |                       |                      |                       |                         |
| 27 x                   | 2       | 140            | 20             | 20               | 16   | 25   |                       |                      |                       |                         |
| 28 x                   | 1,5     | 140            | 20             | 20               | 16   | 26,5 |                       | C0513500.0476        |                       |                         |
| 28 x                   | 2       | 140            | 20             | 20               | 16   | 26   |                       |                      |                       |                         |
| 30 x                   | 1,5     | 150            | 22             | 22               | 18   | 28,5 |                       | C0513500.0490        |                       |                         |
| DIN 371                |         |                |                |                  |      |      |                       | 166                  | 167                   | 167                     |
| DIN 2181               |         |                |                |                  |      |      |                       |                      |                       |                         |

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

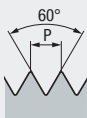
Accessories



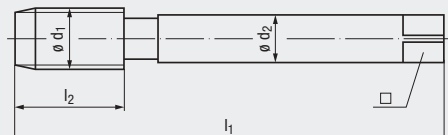
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MF

DIN 13



DIN  
374



Z  
CNC-controlled  
machines



new

new

ISO 2/6H

HSSE

R45

E / 1,5-2

E / 0

ISO 2/6H

TIN

HSSE

R45

E / 1,5-2

E / 0

ISO 2/6H

GLT-1

HSSE

R45

E / 1,5-2

E / 0

ISO 1/4H

HSSE

R45

C / 2-3

E / 0 / P

Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

max. 3 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

» 78

P 1.1-3.1

P 1.1-4.1

N 2.2, 2.4-2.5

S 1.1

P 1.1-4.1

M 1.1-4.1

N 1.4, 2.1-2.2

N 2.4-2.5

S 1.1

P 1.1-3.1

| Ø d <sub>1</sub><br>mm | P<br>mm   | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |      | Enorm<br>2-Z/E-IKZ | Enorm<br>2-Z/E-IKZ<br>TIN | Enorm<br>2-Z/E-IKZ<br>GLT-1 | Enorm<br>2-Z  |
|------------------------|-----------|----------------|----------------|------------------|------|------|--------------------|---------------------------|-----------------------------|---------------|
| <b>M</b>               | 8 x 0,75  | 80             | 8              | 6                | 4,9  | 7,2  |                    |                           |                             |               |
|                        | 8 x 1     | 90             | 10             | 6                | 4,9  | 7    | C0973500.0251      |                           |                             | C0503510.0251 |
|                        | 9 x 1     | 90             | 10             | 7                | 5,5  | 8    |                    |                           |                             |               |
|                        | 10 x 0,75 | 90             | 10             | 7                | 5,5  | 9,2  |                    |                           |                             |               |
|                        | 10 x 1    | 90             | 10             | 7                | 5,5  | 9    | C0973500.0276      |                           |                             | C0503510.0276 |
|                        | 10 x 1,25 | 100            | 16             | 7                | 5,5  | 8,8  |                    |                           |                             |               |
|                        | 11 x 1    | 90             | 11             | 8                | 6,2  | 10   |                    |                           |                             |               |
|                        | 12 x 1    | 100            | 11             | 9                | 7    | 11   |                    |                           |                             | C0503510.0301 |
|                        | 12 x 1,25 | 100            | 15             | 9                | 7    | 10,8 |                    |                           |                             |               |
|                        | 12 x 1,5  | 100            | 15             | 9                | 7    | 10,5 | C0973500.0303      | C0973700.0303             | C097C400.0303               | C0503510.0303 |
|                        | 14 x 1    | 100            | 11             | 11               | 9    | 13   |                    |                           |                             |               |
|                        | 14 x 1,25 | 100            | 15             | 11               | 9    | 12,8 |                    |                           |                             |               |
|                        | 14 x 1,5  | 100            | 15             | 11               | 9    | 12,5 | C0973500.0331      | C0973700.0331             | C097C400.0331               | C0503510.0331 |
|                        | 15 x 1    | 100            | 12             | 12               | 9    | 14   |                    |                           |                             |               |
|                        | 16 x 1    | 100            | 12             | 12               | 9    | 15   |                    |                           |                             |               |
|                        | 16 x 1,5  | 100            | 15             | 12               | 9    | 14,5 | C0973500.0359      | C0973700.0359             | C097C400.0359               | C0503510.0359 |
|                        | 18 x 1    | 110            | 13             | 14               | 11   | 17   |                    |                           |                             |               |
|                        | 18 x 1,5  | 110            | 17             | 14               | 11   | 16,5 |                    |                           |                             | C0503510.0390 |
|                        | 18 x 2    | 125            | 20             | 14               | 11   | 16   |                    |                           |                             |               |
|                        | 20 x 1    | 125            | 14             | 16               | 12   | 19   |                    |                           |                             |               |
|                        | 20 x 1,5  | 125            | 17             | 16               | 12   | 18,5 | C0973500.0422      | C0973700.0422             | C097C400.0422               | C0503510.0422 |
|                        | 20 x 2    | 140            | 20             | 16               | 12   | 18   |                    |                           |                             |               |
|                        | 22 x 1    | 125            | 14             | 18               | 14,5 | 21   |                    |                           |                             |               |
|                        | 22 x 1,5  | 125            | 17             | 18               | 14,5 | 20,5 |                    |                           |                             | C0503510.0438 |
|                        | 22 x 2    | 140            | 20             | 18               | 14,5 | 20   |                    |                           |                             |               |
|                        | 24 x 1    | 140            | 15             | 18               | 14,5 | 23   |                    |                           |                             |               |
|                        | 24 x 1,5  | 140            | 20             | 18               | 14,5 | 22,5 |                    |                           |                             | C0503510.0452 |
|                        | 24 x 2    | 140            | 20             | 18               | 14,5 | 22   |                    |                           |                             |               |
|                        | 25 x 1,5  | 140            | 20             | 18               | 14,5 | 23,5 |                    |                           |                             |               |
|                        | 26 x 1,5  | 140            | 20             | 18               | 14,5 | 24,5 |                    |                           |                             |               |
|                        | 27 x 1,5  | 140            | 20             | 20               | 16   | 25,5 |                    |                           |                             |               |
|                        | 27 x 2    | 140            | 20             | 20               | 16   | 25   |                    |                           |                             |               |
|                        | 28 x 1,5  | 140            | 20             | 20               | 16   | 26,5 |                    |                           |                             |               |
|                        | 28 x 2    | 140            | 20             | 20               | 16   | 26   |                    |                           |                             |               |
|                        | 30 x 1,5  | 150            | 22             | 22               | 18   | 28,5 |                    |                           |                             |               |

DIN 371



DIN 2181



167

| Z<br>CNC-controlled machines                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |            |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|--|------------|
|   |  |  |  |  |  |  |  |            |
|   |  |  |  |  |  |  |  |            |
| ISO 3/6G                                                                           | ISO 3/6G                                                                          | ISO 3/6G                                                                          | ISO 2/6H                                                                          | ISO 2/6H                                                                          |  |  |  |            |
| HSSE                                                                               | TIN                                                                               | GLT-1                                                                             | HSSE                                                                              | GLT-1                                                                             |  |  |  |            |
| R45                                                                                | HSSE                                                                              | HSSE                                                                              | LH, L45                                                                           | HSSE                                                                              |  |  |  |            |
| E / 1,5-2                                                                          | R45                                                                               | R45                                                                               | C / 2-3                                                                           | LH, L45                                                                           |  |  |  |            |
| E / O / P                                                                          | E / 1,5-2                                                                         | E / 1,5-2                                                                         | E / O / P                                                                         | C / 2-3                                                                           |  |  |  |            |
| E / O / P                                                                          | E / O / P                                                                         | E / O / P                                                                         | E / O / P                                                                         | E / O / P                                                                         |  |  |  |            |
| max. 3 x d <sub>1</sub>                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |            |
|  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |            |
| P 1.1-3.1                                                                          | P 1.1-4.1<br>N 2.2, 2.4-2.5<br>S 1.1                                              | P 1.1-4.1<br>M 1.1-4.1<br>N 1.4, 2.1-2.2<br>N 2.4-2.5<br>S 1.1                    | P 1.1-3.1                                                                         | P 1.1-4.1<br>M 1.1-4.1<br>N 1.4, 2.1-2.2<br>N 2.4-2.5<br>S 1.1                    |  |  |  |            |
| Enorm 2-Z/E                                                                        | Enorm 2-Z/E TIN                                                                   | Enorm 2-Z/E GLT-1                                                                 | Enorm 2-Z-LH                                                                      | Enorm 2-Z-LH GLT-1                                                                |  |  |  |            |
| C0513520.0250                                                                      | C0513720.0250                                                                     | C051C420.0250                                                                     | C0503550.0251                                                                     | C050C450.0251                                                                     |  |  |  | M 8 x 0,75 |
| C0513520.0251                                                                      | C0513720.0251                                                                     | C051C420.0251                                                                     |                                                                                   |                                                                                   |  |  |  | 8 x 1      |
|                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 9 x 1      |
| C0513520.0276                                                                      | C0513720.0276                                                                     | C051C420.0276                                                                     | C0503550.0276                                                                     | C050C450.0276                                                                     |  |  |  | 10 x 0,75  |
| C0513520.0277                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 10 x 1     |
| C0513520.0288                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 10 x 1,25  |
| C0513520.0301                                                                      | C0513720.0301                                                                     | C051C420.0301                                                                     | C0503550.0301                                                                     | C050C450.0301                                                                     |  |  |  | 11 x 1     |
| C0513520.0302                                                                      |                                                                                   |                                                                                   | C0503550.0302                                                                     |                                                                                   |  |  |  | 12 x 1     |
| C0513520.0303                                                                      | C0513720.0303                                                                     | C051C420.0303                                                                     | C0503550.0303                                                                     | C050C450.0303                                                                     |  |  |  | 12 x 1,25  |
| C0513520.0329                                                                      |                                                                                   |                                                                                   | C0503550.0329                                                                     |                                                                                   |  |  |  | 12 x 1,5   |
| C0513520.0331                                                                      | C0513720.0331                                                                     | C051C420.0331                                                                     | C0503550.0331                                                                     | C050C450.0331                                                                     |  |  |  | 14 x 1     |
|                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 14 x 1,25  |
| C0513520.0357                                                                      |                                                                                   |                                                                                   | C0503550.0357                                                                     |                                                                                   |  |  |  | 14 x 1,5   |
| C0513520.0359                                                                      | C0513720.0359                                                                     | C051C420.0359                                                                     | C0503550.0359                                                                     | C050C450.0359                                                                     |  |  |  | 15 x 1     |
| C0513520.0388                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 16 x 1     |
| C0513520.0390                                                                      | C0513720.0390                                                                     | C051C420.0390                                                                     | C0503550.0390                                                                     | C050C450.0390                                                                     |  |  |  | 16 x 1,5   |
|                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 18 x 1     |
| C0513520.0420                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 18 x 1,5   |
| C0513520.0422                                                                      | C0513720.0422                                                                     | C051C420.0422                                                                     | C0503550.0422                                                                     | C050C450.0422                                                                     |  |  |  | 18 x 2     |
|                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 20 x 1     |
| C0513520.0436                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 20 x 1,5   |
| C0513520.0438                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 20 x 2     |
|                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 22 x 1     |
| C0513520.0450                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 22 x 1,5   |
| C0513520.0452                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 22 x 2     |
|                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 24 x 1     |
| C0513520.0464                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 24 x 1,5   |
|                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 24 x 2     |
|                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 25 x 1,5   |
|                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 26 x 1,5   |
| C0513520.0476                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 27 x 1,5   |
|                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 27 x 2     |
| C0513520.0490                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 28 x 1,5   |
|                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 28 x 2     |
|                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  | 30 x 1,5   |
| 167                                                                                |                                                                                   | 167                                                                               |                                                                                   |                                                                                   |  |  |  |            |

Product Finder

V<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

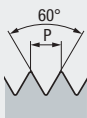
SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

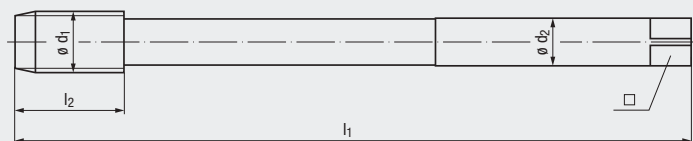
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MF

DIN 13



Mit langen Nuten und langem Schaft für Gewindetiefen bis max. 3 x d<sub>1</sub>  
With long flutes and long shank for thread depths up to max. 3 x d<sub>1</sub>



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |    | Rekord<br>2A-Z-1KZ-LF3<br>TiCN | Rekord<br>2D-Z-1KZ-LF3<br>TiN | Rekord<br>2D-Z-BF-1KZ-LF3<br>TiN |
|------------------------|---------|----------------|----------------|------------------|------|----|--------------------------------|-------------------------------|----------------------------------|
| <b>M</b> 24            | x 2     | 215            | 20             | 18               | 14,5 | 22 | C0579401.0453                  | C4963701.0453                 | C4973701.0453                    |
| 30                     | x 2     | 240            | 22             | 22               | 18   | 28 | C0579401.0491                  | C4963701.0491                 | C4973701.0491                    |
| 36                     | x 3     | 270            | 30             | 28               | 22   | 33 | C0579401.0534                  | C4963701.0534                 | C4973701.0534                    |

1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

**Z**  
CNC-controlled  
machines



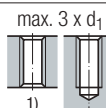
6HX

TiCN

HSSE

C / 2-3

E / 0



6HX

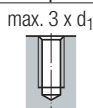
TiN

HSSE

R15

C / 2-3

E / 0



6HX

TiN

HSSE

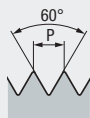
R15

C / 2-3

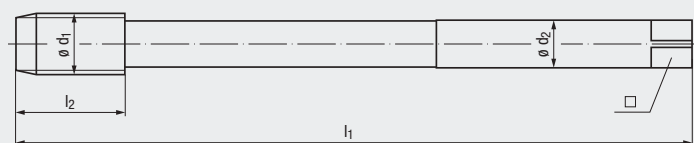
E / 0

# MF

DIN 13



Mit langen Nuten und langem Schaft für Gewindetiefen bis max.  $4 \times d_1$   
With long flutes and long shank for thread depths up to max.  $4 \times d_1$



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| $\emptyset d_1$<br>mm | P<br>mm | $l_1$ | $l_2$ | $\emptyset d_2$ | $\square$ |    |                            |                            |                               |
|-----------------------|---------|-------|-------|-----------------|-----------|----|----------------------------|----------------------------|-------------------------------|
| <b>M</b> 24           | x 2     | 240   | 20    | 18              | 14,5      | 22 | <b>Rekord 2A-Z-IKZ-LF4</b> | <b>Rekord 2D-Z-IKZ-LF4</b> | <b>Rekord 2D-Z-BF-IKZ-LF4</b> |
| 30                    | x 2     | 270   | 22    | 22              | 18        | 28 | C0539401.0453              | C4283701.0453              | C4063701.0453                 |
| 36                    | x 3     | 310   | 30    | 28              | 22        | 33 | C0539401.0491              | C4283701.0491              | C4063701.0491                 |
|                       |         |       |       |                 |           |    | C0539401.0534              | C4283701.0534              | C4063701.0534                 |

<sup>1)</sup> Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Threading in through holes is possible only with external cooling/lubrication

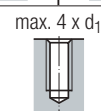
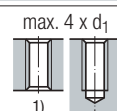
**Z**  
CNC-controlled  
machines



6HX  
TICN  
HSSE  
C / 2-3  
E / O

6HX  
TIN  
HSSE  
R15  
C / 2-3  
E / O

6HX  
TIN  
HSSE  
R15  
C / 2-3  
E / O



**P** 3.1-4.1  
**K** 1.1-4.2

**P** 3.1-5.1  
**N** 2.4-2.5

**P** 3.1-5.1  
**N** 2.4-2.5

Product  
Finder

V<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

Accessories



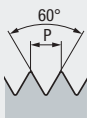
Spannzangen-Aufnahmen der  
Typenreihe Softsynchro® zur  
synchronen Herstellung von großen  
Gewinden siehe Seite 621 und 630

Collet holders of our Softsynchro®  
series for the synchronous production of  
large threads, see pages 621 and 630

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MF

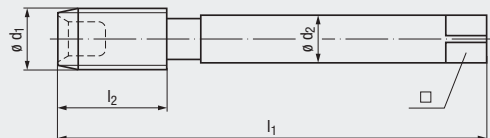
DIN 13



DIN  
374

Mit Spanglocke

With internal chip collector



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

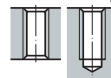
VA  
Stainless steel  
materials



6HX  
NE2  
HSSE  
C / 2-3  
P / O 1)

6HX  
TIN  
HSSE  
C / 2-3  
P / O 1)

max. 1,5 x d<sub>1</sub>



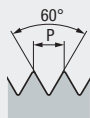
P 1.1-3.1  
K 1.1-4.2

P 1.1-3.1  
K 1.1-4.2

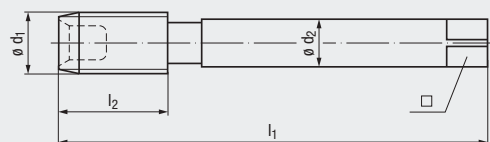
| ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |      | Robust<br>2X-VA<br>NE2 | Robust<br>2X-VA<br>TIN |
|------------------------|---------|----------------|----------------|------------------|------|------|------------------------|------------------------|
| <b>M</b>               |         |                |                |                  |      |      |                        |                        |
| 20                     | x 1,5   | 125            | 25             | 16               | 12   | 18,5 | C0803001.0422          | C0803101.0422          |
| 22                     | x 1,5   | 125            | 25             | 18               | 14,5 | 20,5 | C0803001.0438          | C0803101.0438          |
| 24                     | x 1,5   | 140            | 27             | 18               | 14,5 | 22,5 | C0803001.0452          | C0803101.0452          |
| 24                     | x 2     | 140            | 27             | 18               | 14,5 | 22   | C0803001.0453          | C0803101.0453          |
| 27                     | x 1,5   | 140            | 28             | 20               | 16   | 25,5 | C0803001.0470          | C0803101.0470          |
| 27                     | x 2     | 140            | 28             | 20               | 16   | 25   | C0803001.0471          | C0803101.0471          |
| 30                     | x 1,5   | 150            | 28             | 22               | 18   | 28,5 | C0803001.0490          | C0803101.0490          |
| 33                     | x 1,5   | 160            | 30             | 25               | 20   | 31,5 | C0803001.0511          | C0803101.0511          |
| 33                     | x 2     | 160            | 30             | 25               | 20   | 31   | C0803001.0512          | C0803101.0512          |
| 36                     | x 1,5   | 170            | 30             | 28               | 22   | 34,5 | C0803001.0532          | C0803101.0532          |
| 36                     | x 2     | 170            | 30             | 28               | 22   | 34   | C0803001.0533          | C0803101.0533          |
| 36                     | x 3     | 200            | 42             | 28               | 22   | 33   | C0803001.0534          | C0803101.0534          |
| 38                     | x 1,5   | 170            | 30             | 28               | 22   | 36,5 | C0803001.0546          | C0803101.0546          |
| 39                     | x 3     | 200            | 42             | 32               | 24   | 36   | C0803001.0555          | C0803101.0555          |
| 40                     | x 2     | 170            | 30             | 32               | 24   | 38   | C0803001.0561          | C0803101.0561          |
| 42                     | x 1,5   | 170            | 30             | 32               | 24   | 40,5 | C0803001.0574          | C0803101.0574          |
| 42                     | x 2     | 170            | 30             | 32               | 24   | 40   | C0803001.0575          | C0803101.0575          |
| 42                     | x 3     | 200            | 45             | 32               | 24   | 39   | C0803001.0576          | C0803101.0576          |
| 45                     | x 3     | 200            | 45             | 36               | 29   | 42   | C0803001.0597          | C0803101.0597          |
| 48                     | x 1,5   | 190            | 32             | 36               | 29   | 46,5 | C0803001.0616          | C0803101.0616          |
| 48                     | x 2     | 190            | 32             | 36               | 29   | 46   | C0803001.0617          | C0803101.0617          |
| 48                     | x 3     | 225            | 50             | 36               | 29   | 45   | C0803001.0618          | C0803101.0618          |
| 52                     | x 3     | 225            | 50             | 40               | 32   | 49   | C0803001.0646          | C0803101.0646          |
| 56                     | x 3     | 225            | 50             | 40               | 32   | 53   | C0803001.0661          | C0803101.0661          |
| 56                     | x 4     | 250            | 60             | 40               | 32   | 52   | C0803001.0662          | C0803101.0662          |
| 60                     | x 4     | 280            | 60             | 45               | 35   | 56   | C0803001.0672          | C0803101.0672          |
| 64                     | x 3     | 275            | 55             | 50               | 39   | 61   | C0803001.0681          | C0803101.0681          |
| 64                     | x 4     | 315            | 65             | 50               | 39   | 60   | C0803001.0682          | C0803101.0682          |

# MF

DIN 13


**DIN  
374**

Mit Spanglocke  
With internal chip collector



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

**VA**  
Stainless steel  
materials



6HX

NE2

HSSE

C / 2-3

P / O 1)

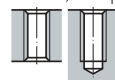
6HX

TIN

HSSE

C / 2-3

P / O 1)

max. 1,5 x d<sub>1</sub>


**P** 1.1-3.1  
**K** 1.1-4.2

**P** 1.1-3.1  
**K** 1.1-4.2

**Robust  
2X-VA  
NE2**

**Robust  
2X-VA  
TIN**

|          | ø d <sub>1</sub><br>mm |   | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □  |     |               |               |
|----------|------------------------|---|---------|----------------|----------------|------------------|----|-----|---------------|---------------|
| <b>M</b> | 68                     | x | 4       | 315            | 65             | 50               | 39 | 64  | C0803001.0692 | C0803101.0692 |
|          | 70                     | x | 3       | 275            | 55             | 50               | 39 | 67  | C0803001.0696 | C0803101.0696 |
|          | 70                     | x | 4       | 340            | 65             | 50               | 39 | 66  | C0803001.0697 | C0803101.0697 |
|          | 72                     | x | 3       | 275            | 55             | 50               | 39 | 69  | C0803001.0702 | C0803101.0702 |
|          | 72                     | x | 4       | 340            | 65             | 50               | 39 | 68  | C0803001.0703 | C0803101.0703 |
|          | 72                     | x | 6       | 340            | 80             | 50               | 39 | 66  | C0803001.0704 | C0803101.0704 |
|          | 76                     | x | 3       | 275            | 55             | 50               | 39 | 73  | C0803001.0714 | C0803101.0714 |
|          | 76                     | x | 4       | 340            | 65             | 50               | 39 | 72  | C0803001.0715 | C0803101.0715 |
|          | 76                     | x | 6       | 340            | 80             | 50               | 39 | 70  | C0803001.0716 | C0803101.0716 |
|          | 80                     | x | 4       | 360            | 65             | 50               | 39 | 76  | C0803001.0727 | C0803101.0727 |
|          | 80                     | x | 6       | 360            | 80             | 50               | 39 | 74  | C0803001.0728 | C0803101.0728 |
|          | 85                     | x | 3       | 325            | 60             | 50               | 39 | 82  | C0803001.0736 | C0803101.0736 |
|          | 85                     | x | 4       | 380            | 70             | 50               | 39 | 81  | C0803001.0737 | C0803101.0737 |
|          | 90                     | x | 3       | 325            | 60             | 50               | 39 | 87  | C0803001.0746 | C0803101.0746 |
|          | 90                     | x | 4       | 380            | 70             | 50               | 39 | 86  | C0803001.0747 | C0803101.0747 |
|          | 90                     | x | 6       | 380            | 80             | 50               | 39 | 84  | C0803001.0748 | C0803101.0748 |
|          | 95                     | x | 6       | 400            | 85             | 56               | 44 | 89  | C0803001.0758 | C0803101.0758 |
|          | 100                    | x | 4       | 400            | 70             | 56               | 44 | 96  | C0803001.0767 | C0803101.0767 |
|          | 100                    | x | 6       | 400            | 85             | 56               | 44 | 94  | C0803001.0768 | C0803101.0768 |
|          | 110                    | x | 6       | 400            | 85             | 56               | 44 | 104 | C0803001.0788 | C0803101.0788 |
|          | 115                    | x | 3       | 350            | 65             | 56               | 44 | 112 | C0803001.0791 | C0803101.0791 |
|          | 120                    | x | 4       | 400            | 75             | 56               | 44 | 116 | C0803001.0797 | C0803101.0797 |
|          | 120                    | x | 6       | 400            | 90             | 56               | 44 | 114 | C0803001.0798 | C0803101.0798 |

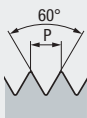
- 1) Bevorzugt mit Pastenschmierung einsetzen, neben Werkzeug auch Bohrungswandung einstreichen.  
Ölschmierung ist nur bei senkrechter Grundlochsbearbeitung möglich, wenn das Grundloch mit Öl vollgefüllt ist.  
If possible, use paste lubrication, coating both the tool and the walls of the drilled hole.  
Lubrication with oil is possible only in the vertical machining of blind holes, if the hole is entirely filled with oil.



|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MF

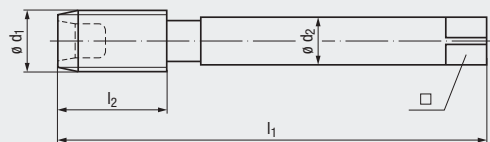
DIN 13



DIN  
374

Mit Spanglocke

With internal chip collector



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

VA  
Stainless steel  
materials



new



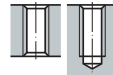
new



6HX  
NE2  
HSSE  
C / 2-3  
P / O 1)

6HX  
TIN  
HSSE  
C / 2-3  
P / O 1)

max. 1,5 x d<sub>1</sub>



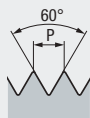
P 1.1-3.1  
K 1.1-4.2

P 1.1-3.1  
K 1.1-4.2

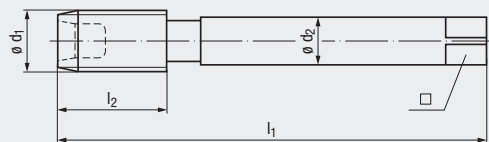
|          | ø d <sub>1</sub><br>mm |   | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |      | Robust<br>2ST-VA<br>NE2 | Robust<br>2ST-VA<br>TIN |
|----------|------------------------|---|---------|----------------|----------------|------------------|------|------|-------------------------|-------------------------|
| <b>M</b> | 20                     | x | 1,5     | 125            | 25             | 16               | 12   | 18,5 | C2023001.0422           | C2023101.0422           |
|          | 22                     | x | 1,5     | 125            | 25             | 18               | 14,5 | 20,5 | C2023001.0438           | C2023101.0438           |
|          | 24                     | x | 1,5     | 140            | 27             | 18               | 14,5 | 22,5 | C2023001.0452           | C2023101.0452           |
|          | 24                     | x | 2       | 140            | 27             | 18               | 14,5 | 22   | C2023001.0453           | C2023101.0453           |
|          | 27                     | x | 1,5     | 140            | 28             | 20               | 16   | 25,5 | C2023001.0470           | C2023101.0470           |
|          | 27                     | x | 2       | 140            | 28             | 20               | 16   | 25   | C2023001.0471           | C2023101.0471           |
|          | 30                     | x | 1,5     | 150            | 28             | 22               | 18   | 28,5 | C2023001.0490           | C2023101.0490           |
|          | 33                     | x | 1,5     | 160            | 30             | 25               | 20   | 31,5 | C2023001.0511           | C2023101.0511           |
|          | 33                     | x | 2       | 160            | 30             | 25               | 20   | 31   | C2023001.0512           | C2023101.0512           |
|          | 36                     | x | 1,5     | 170            | 30             | 28               | 22   | 34,5 | C2023001.0532           | C2023101.0532           |
|          | 36                     | x | 2       | 170            | 30             | 28               | 22   | 34   | C2023001.0533           | C2023101.0533           |
|          | 36                     | x | 3       | 200            | 42             | 28               | 22   | 33   | C2023001.0534           | C2023101.0534           |
|          | 38                     | x | 1,5     | 170            | 30             | 28               | 22   | 36,5 | C2023001.0546           | C2023101.0546           |
|          | 39                     | x | 3       | 200            | 42             | 32               | 24   | 36   | C2023001.0555           | C2023101.0555           |
|          | 40                     | x | 2       | 170            | 30             | 32               | 24   | 38   | C2023001.0561           | C2023101.0561           |
|          | 42                     | x | 1,5     | 170            | 30             | 32               | 24   | 40,5 | C2023001.0574           | C2023101.0574           |
|          | 42                     | x | 2       | 170            | 30             | 32               | 24   | 40   | C2023001.0575           | C2023101.0575           |
|          | 42                     | x | 3       | 200            | 45             | 32               | 24   | 39   | C2023001.0576           | C2023101.0576           |
|          | 45                     | x | 3       | 200            | 45             | 36               | 29   | 42   | C2023001.0597           | C2023101.0597           |
|          | 48                     | x | 1,5     | 190            | 32             | 36               | 29   | 46,5 | C2023001.0616           | C2023101.0616           |
|          | 48                     | x | 2       | 190            | 32             | 36               | 29   | 46   | C2023001.0617           | C2023101.0617           |
|          | 48                     | x | 3       | 225            | 50             | 36               | 29   | 45   | C2023001.0618           | C2023101.0618           |
|          | 52                     | x | 3       | 225            | 50             | 40               | 32   | 49   | C2023001.0646           | C2023101.0646           |
|          | 56                     | x | 3       | 225            | 50             | 40               | 32   | 53   | C2023001.0661           | C2023101.0661           |
|          | 56                     | x | 4       | 250            | 60             | 40               | 32   | 52   | C2023001.0662           | C2023101.0662           |
|          | 60                     | x | 4       | 280            | 60             | 45               | 35   | 56   | C2023001.0672           | C2023101.0672           |
|          | 64                     | x | 3       | 275            | 55             | 50               | 39   | 61   | C2023001.0681           | C2023101.0681           |
|          | 64                     | x | 4       | 315            | 65             | 50               | 39   | 60   | C2023001.0682           | C2023101.0682           |

**MF**

DIN 13

DIN  
374

Mit Spanglocke  
With internal chip collector



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

VA  
Stainless steel  
materials



new



new

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

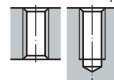
BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessoriesmax. 1,5 x d<sub>1</sub>

P 1.1-3.1  
K 1.1-4.2

P 1.1-3.1  
K 1.1-4.2

|          | $\varnothing d_1$<br>mm |   | P<br>mm | $l_1$ | $l_2$ | $\varnothing d_2$ | □  |     | Robust<br>2ST-VA<br>NE2 | Robust<br>2ST-VA<br>TIN |
|----------|-------------------------|---|---------|-------|-------|-------------------|----|-----|-------------------------|-------------------------|
| <b>M</b> | 68                      | x | 4       | 315   | 65    | 50                | 39 | 64  | C2023001.0692           | C2023101.0692           |
|          | 70                      | x | 3       | 275   | 55    | 50                | 39 | 67  | C2023001.0696           | C2023101.0696           |
|          | 70                      | x | 4       | 340   | 65    | 50                | 39 | 66  | C2023001.0697           | C2023101.0697           |
|          | 72                      | x | 3       | 275   | 55    | 50                | 39 | 69  | C2023001.0702           | C2023101.0702           |
|          | 72                      | x | 4       | 340   | 65    | 50                | 39 | 68  | C2023001.0703           | C2023101.0703           |
|          | 72                      | x | 6       | 340   | 80    | 50                | 39 | 66  | C2023001.0704           | C2023101.0704           |
|          | 76                      | x | 3       | 275   | 55    | 50                | 39 | 73  | C2023001.0714           | C2023101.0714           |
|          | 76                      | x | 4       | 340   | 65    | 50                | 39 | 72  | C2023001.0715           | C2023101.0715           |
|          | 76                      | x | 6       | 340   | 80    | 50                | 39 | 70  | C2023001.0716           | C2023101.0716           |
|          | 80                      | x | 4       | 360   | 65    | 50                | 39 | 76  | C2023001.0727           | C2023101.0727           |
|          | 80                      | x | 6       | 360   | 80    | 50                | 39 | 74  | C2023001.0728           | C2023101.0728           |
|          | 85                      | x | 3       | 325   | 60    | 50                | 39 | 82  | C2023001.0736           | C2023101.0736           |
|          | 85                      | x | 4       | 380   | 70    | 50                | 39 | 81  | C2023001.0737           | C2023101.0737           |
|          | 90                      | x | 3       | 325   | 60    | 50                | 39 | 87  | C2023001.0746           | C2023101.0746           |
|          | 90                      | x | 4       | 380   | 70    | 50                | 39 | 86  | C2023001.0747           | C2023101.0747           |
|          | 90                      | x | 6       | 380   | 80    | 50                | 39 | 84  | C2023001.0748           | C2023101.0748           |
|          | 95                      | x | 6       | 400   | 85    | 56                | 44 | 89  | C2023001.0758           | C2023101.0758           |
|          | 100                     | x | 4       | 400   | 70    | 56                | 44 | 96  | C2023001.0767           | C2023101.0767           |
|          | 100                     | x | 6       | 400   | 85    | 56                | 44 | 94  | C2023001.0768           | C2023101.0768           |
|          | 110                     | x | 6       | 400   | 85    | 56                | 44 | 104 | C2023001.0788           | C2023101.0788           |
|          | 115                     | x | 3       | 350   | 65    | 56                | 44 | 112 | C2023001.0791           | C2023101.0791           |
|          | 120                     | x | 4       | 400   | 75    | 56                | 44 | 116 | C2023001.0797           | C2023101.0797           |
|          | 120                     | x | 6       | 400   | 90    | 56                | 44 | 114 | C2023001.0798           | C2023101.0798           |

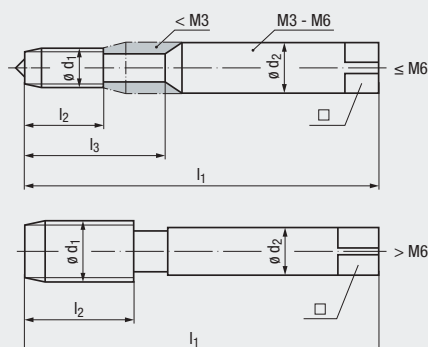
- 1) Bevorzugt mit Pastenschmierung einsetzen, neben Werkzeug auch Bohrungswandung einstreichen.  
Ölschmierung ist nur bei senkrechter Grundlochsbearbeitung möglich, wenn das Grundloch mit Öl vollgefüllt ist.  
If possible, use paste lubrication, coating both the tool and the walls of the drilled hole.  
Lubrication with oil is possible only in the vertical machining of blind holes, if the hole is entirely filled with oil.

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



DIN 13

DIN  
2181



STEEL  
Steel  
materials



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



6HX

6HX

HSSE

HSSE

LH

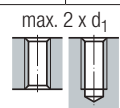
C / 2-3

C / 2-3

E / 0

E / 0

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

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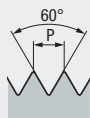
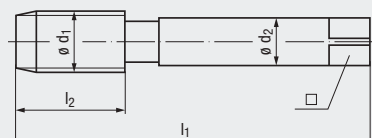
**K** 1.1-4.2  
**N** 2.3

**K** 1.1-4.2  
**N** 2.3

|   | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □    |  | Rekord<br>A-STEEL | Rekord<br>A-STEEL-LH |  |  |
|---|------------------------|---------|----------------|----------------|----------------|------------------|------|-------------------------------------------------------------------------------------|-------------------|----------------------|--|--|
| M | 2,5                    | x 0,35  | 40             | 9              | —              | 2,8              | 2,1  | 2,15                                                                                | A0101001.0196     |                      |  |  |
|   | 2,6                    | x 0,35  | 40             | 9              | —              | 2,8              | 2,1  | 2,25                                                                                | A0101001.0199     |                      |  |  |
|   | 3                      | x 0,35  | 40             | 8              | 18             | 3,5              | 2,7  | 2,65                                                                                | A0101001.0202     | A0101051.0202        |  |  |
|   | 3,5                    | x 0,35  | 45             | 8              | 20             | 4                | 3    | 3,15                                                                                | A0101001.0205     | A0101051.0205        |  |  |
|   | 4                      | x 0,35  | 45             | 9              | 22             | 4,5              | 3,4  | 3,65                                                                                | A0101001.0209     | A0101051.0209        |  |  |
|   | 4                      | x 0,5   | 45             | 9              | 22             | 4,5              | 3,4  | 3,5                                                                                 | A0101001.0210     | A0101051.0210        |  |  |
|   | 4,5                    | x 0,5   | 50             | 10             | 24             | 6                | 4,9  | 4                                                                                   | A0101001.0214     |                      |  |  |
|   | 5                      | x 0,5   | 50             | 11             | 25             | 6                | 4,9  | 4,5                                                                                 | A0101001.0218     | A0101051.0218        |  |  |
|   | 6                      | x 0,5   | 56             | 12             | 27             | 6                | 4,9  | 5,5                                                                                 | A0101001.0228     | A0101051.0228        |  |  |
|   | 6                      | x 0,75  | 56             | 12             | 27             | 6                | 4,9  | 5,2                                                                                 | A0101001.0229     | A0101051.0229        |  |  |
|   | 7                      | x 0,75  | 56             | 14             | —              | 6                | 4,9  | 6,2                                                                                 | A0101001.0239     | A0101051.0239        |  |  |
|   | 8                      | x 0,5   | 56             | 14             | —              | 6                | 4,9  | 7,5                                                                                 | A0101001.0249     | A0101051.0249        |  |  |
|   | 8                      | x 0,75  | 56             | 14             | —              | 6                | 4,9  | 7,2                                                                                 | A0101001.0250     | A0101051.0250        |  |  |
|   | 8                      | x 1     | 63             | 17             | —              | 6                | 4,9  | 7                                                                                   | A0101001.0251     | A0101051.0251        |  |  |
|   | 9                      | x 1     | 63             | 17             | —              | 7                | 5,5  | 8                                                                                   | A0101001.0263     | A0101051.0263        |  |  |
|   | 10                     | x 0,75  | 63             | 18             | —              | 7                | 5,5  | 9,2                                                                                 | A0101001.0275     | A0101051.0275        |  |  |
|   | 10                     | x 1     | 63             | 18             | —              | 7                | 5,5  | 9                                                                                   | A0101001.0276     | A0101051.0276        |  |  |
|   | 10                     | x 1,25  | 70             | 22             | —              | 7                | 5,5  | 8,8                                                                                 | A0101001.0277     | A0101051.0277        |  |  |
|   | 11                     | x 1     | 63             | 18             | —              | 8                | 6,2  | 10                                                                                  | A0101001.0288     | A0101051.0288        |  |  |
|   | 12                     | x 1     | 70             | 18             | —              | 9                | 7    | 11                                                                                  | A0101001.0301     | A0101051.0301        |  |  |
|   | 12                     | x 1,25  | 70             | 20             | —              | 9                | 7    | 10,8                                                                                | A0101001.0302     | A0101051.0302        |  |  |
|   | 12                     | x 1,5   | 70             | 20             | —              | 9                | 7    | 10,5                                                                                | A0101001.0303     | A0101051.0303        |  |  |
|   | 13                     | x 1     | 70             | 18             | —              | 11               | 9    | 12                                                                                  | A0101001.0315     | A0101051.0315        |  |  |
|   | 14                     | x 1     | 70             | 18             | —              | 11               | 9    | 13                                                                                  | A0101001.0329     | A0101051.0329        |  |  |
|   | 14                     | x 1,25  | 70             | 20             | —              | 11               | 9    | 12,8                                                                                | A0101001.0330     | A0101051.0330        |  |  |
|   | 14                     | x 1,5   | 70             | 20             | —              | 11               | 9    | 12,5                                                                                | A0101001.0331     | A0101051.0331        |  |  |
|   | 15                     | x 1     | 70             | 18             | —              | 12               | 9    | 14                                                                                  | A0101001.0343     | A0101051.0343        |  |  |
|   | 15                     | x 1,5   | 70             | 20             | —              | 12               | 9    | 13,5                                                                                | A0101001.0345     |                      |  |  |
|   | 16                     | x 1     | 70             | 18             | —              | 12               | 9    | 15                                                                                  | A0101001.0357     | A0101051.0357        |  |  |
|   | 16                     | x 1,5   | 70             | 20             | —              | 12               | 9    | 14,5                                                                                | A0101001.0359     | A0101051.0359        |  |  |
|   | 18                     | x 1     | 80             | 18             | —              | 14               | 11   | 17                                                                                  | A0101001.0388     | A0101051.0388        |  |  |
|   | 18                     | x 1,5   | 80             | 22             | —              | 14               | 11   | 16,5                                                                                | A0101001.0390     | A0101051.0390        |  |  |
|   | 18                     | x 2     | 80             | 22             | —              | 14               | 11   | 16                                                                                  | A0101001.0391     |                      |  |  |
|   | 20                     | x 1     | 80             | 18             | —              | 16               | 12   | 19                                                                                  | A0101001.0420     | A0101051.0420        |  |  |
|   | 20                     | x 1,5   | 80             | 22             | —              | 16               | 12   | 18,5                                                                                | A0101001.0422     | A0101051.0422        |  |  |
|   | 20                     | x 2     | 80             | 22             | —              | 16               | 12   | 18                                                                                  | A0101001.0423     |                      |  |  |
|   | 22                     | x 1     | 80             | 18             | —              | 18               | 14,5 | 21                                                                                  | A0101001.0436     | A0101051.0436        |  |  |
|   | 22                     | x 1,5   | 80             | 22             | —              | 18               | 14,5 | 20,5                                                                                | A0101001.0438     | A0101051.0438        |  |  |
|   | 22                     | x 2     | 80             | 22             | —              | 18               | 14,5 | 20                                                                                  | A0101001.0439     |                      |  |  |
|   | 24                     | x 1     | 90             | 18             | —              | 18               | 14,5 | 23                                                                                  | A0101001.0450     | A0101051.0450        |  |  |
|   | 24                     | x 1,5   | 90             | 22             | —              | 18               | 14,5 | 22,5                                                                                | A0101001.0452     | A0101051.0452        |  |  |
|   | 24                     | x 2     | 90             | 22             | —              | 18               | 14,5 | 22                                                                                  | A0101001.0453     | A0101051.0453        |  |  |

**MF**

DIN 13

DIN  
2181Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

» 78

**STEEL**  
Steel  
materials

6HX

6HX

HSSE

HSSE

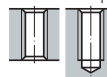
LH

C / 2-3

C / 2-3

E / 0

E / 0

max. 2 x d<sub>1</sub>**K** 1.1-4.2**N** 2.3**K** 1.1-4.2**N** 2.3

|          | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □    |      | Rekord<br>A-STEEL | Rekord<br>A-STEEL-LH |  |  |
|----------|------------------------|---------|----------------|----------------|----------------|------------------|------|------|-------------------|----------------------|--|--|
| <b>M</b> | 25                     | x 1,5   | 90             | 22             | —              | 18               | 14,5 | 23,5 | A0101001.0458     |                      |  |  |
|          | 26                     | x 1,5   | 90             | 22             | —              | 18               | 14,5 | 24,5 | A0101001.0464     | A0101051.0464        |  |  |
|          | 27                     | x 1,5   | 90             | 22             | —              | 20               | 16   | 25,5 | A0101001.0470     | A0101051.0470        |  |  |
|          | 27                     | x 2     | 90             | 22             | —              | 20               | 16   | 25   | A0101001.0471     |                      |  |  |
|          | 28                     | x 1,5   | 90             | 22             | —              | 20               | 16   | 26,5 | A0101001.0476     |                      |  |  |
|          | 30                     | x 1     | 90             | 18             | —              | 22               | 18   | 29   | A0101001.0488     |                      |  |  |
|          | 30                     | x 1,5   | 90             | 22             | —              | 22               | 18   | 28,5 | A0101001.0490     | A0101051.0490        |  |  |
|          | 30                     | x 2     | 90             | 22             | —              | 22               | 18   | 28   | A0101001.0491     | A0101051.0491        |  |  |
|          | 32                     | x 1,5   | 90             | 22             | —              | 22               | 18   | 30,5 | A0101001.0504     |                      |  |  |
|          | 33                     | x 1,5   | 100            | 25             | —              | 25               | 20   | 31,5 | A0101001.0511     |                      |  |  |
|          | 33                     | x 2     | 100            | 25             | —              | 25               | 20   | 31   | A0101001.0512     |                      |  |  |
|          | 34                     | x 1,5   | 100            | 25             | —              | 28               | 22   | 32,5 | A0101001.0518     |                      |  |  |
|          | 35                     | x 1,5   | 100            | 25             | —              | 28               | 22   | 33,5 | A0101001.0525     |                      |  |  |
|          | 36                     | x 1,5   | 100            | 25             | —              | 28               | 22   | 34,5 | A0101001.0532     |                      |  |  |
|          | 36                     | x 2     | 125            | 30             | —              | 28               | 22   | 34   | A0101001.0533     | A0101051.0533        |  |  |
|          | 36                     | x 3     | 125            | 36             | —              | 28               | 22   | 33   | A0101001.0534     |                      |  |  |
|          | 38                     | x 1,5   | 100            | 25             | —              | 28               | 22   | 36,5 | A0101001.0546     |                      |  |  |
|          | 39                     | x 2     | 125            | 30             | —              | 32               | 24   | 37   | A0101001.0554     |                      |  |  |
|          | 39                     | x 3     | 125            | 36             | —              | 32               | 24   | 36   | A0101001.0555     |                      |  |  |
|          | 40                     | x 1,5   | 110            | 25             | —              | 32               | 24   | 38,5 | A0101001.0560     | A0101051.0560        |  |  |
|          | 40                     | x 2     | 125            | 30             | —              | 32               | 24   | 38   | A0101001.0561     |                      |  |  |
|          | 40                     | x 3     | 125            | 36             | —              | 32               | 24   | 37   | A0101001.0562     |                      |  |  |
|          | 42                     | x 1,5   | 110            | 25             | —              | 32               | 24   | 40,5 | A0101001.0574     |                      |  |  |
|          | 42                     | x 2     | 125            | 30             | —              | 32               | 24   | 40   | A0101001.0575     |                      |  |  |
|          | 42                     | x 3     | 125            | 36             | —              | 32               | 24   | 39   | A0101001.0576     |                      |  |  |
|          | 45                     | x 1,5   | 110            | 25             | —              | 36               | 29   | 43,5 | A0101001.0595     |                      |  |  |
|          | 45                     | x 2     | 125            | 30             | —              | 36               | 29   | 43   | A0101001.0596     |                      |  |  |
|          | 45                     | x 3     | 125            | 36             | —              | 36               | 29   | 42   | A0101001.0597     |                      |  |  |
|          | 48                     | x 1,5   | 140            | 25             | —              | 36               | 29   | 46,5 | A0101001.0616     |                      |  |  |
|          | 48                     | x 2     | 140            | 30             | —              | 36               | 29   | 46   | A0101001.0617     |                      |  |  |
|          | 48                     | x 3     | 140            | 36             | —              | 36               | 29   | 45   | A0101001.0618     |                      |  |  |
|          | 50                     | x 1,5   | 140            | 25             | —              | 36               | 29   | 48,5 | A0101001.0630     |                      |  |  |
|          | 50                     | x 2     | 140            | 30             | —              | 36               | 29   | 48   | A0101001.0631     |                      |  |  |
|          | 50                     | x 3     | 140            | 36             | —              | 36               | 29   | 47   | A0101001.0632     |                      |  |  |
|          | 52                     | x 1,5   | 140            | 25             | —              | 40               | 32   | 50,5 | A0101001.0644     |                      |  |  |
|          | 52                     | x 2     | 140            | 32             | —              | 40               | 32   | 50   | A0101001.0645     |                      |  |  |
|          | 52                     | x 3     | 140            | 40             | —              | 40               | 32   | 49   | A0101001.0646     |                      |  |  |
| DIN 371  |                        |         |                |                |                |                  |      |      | 162               | 162                  |  |  |
| DIN 374  |                        |         |                |                |                |                  |      |      | 168               |                      |  |  |



|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

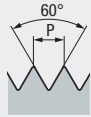
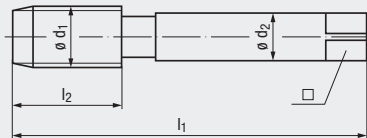
|                                                                                                                                                                                                                                                  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| <p><b>MF</b><br/>DIN 13</p> <p>Toleranz · Tolerance<br/>Beschichtung · Coating<br/>Schneidstoff · Cutting material</p> <p>Technische Informationen<br/>Technical information</p> <p>Gewindetiefe und Lochform<br/>Thread depth and hole type</p> |  |  |  |  |
|                                                                                                                                                                                                                                                  |  |  |  |  |
|                                                                                                                                                                                                                                                  |  |  |  |  |
|                                                                                                                                                                                                                                                  |  |  |  |  |

|                                                                          |                  |                  |                  |
|--------------------------------------------------------------------------|------------------|------------------|------------------|
| <p>Einsatzgebiete – Material<br/>Applications – material</p> <p>» 78</p> | <p>P 1.1-3.1</p> | <p>P 1.1-3.1</p> | <p>P 1.1-3.1</p> |
|                                                                          |                  |                  |                  |

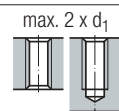
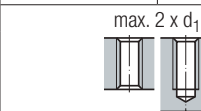
| ø d <sub>1</sub><br>mm | P<br>mm    | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □    |      | HGB-Set<br>V-Nr.1 | HGB-Set<br>F  | HGB-Set-2S<br>(Nr.1, F) |
|------------------------|------------|----------------|----------------|----------------|------------------|------|------|-------------------|---------------|-------------------------|
| <b>M</b>               | 2,5 x 0,35 | 40             | 9              | —              | 2,8              | 2,1  | 2,15 | H0211009.0196     | H0211001.0196 | H0201001.0196           |
|                        | 2,6 x 0,35 | 40             | 9              | —              | 2,8              | 2,1  | 2,25 |                   |               |                         |
|                        | 3 x 0,35   | 40             | 8              | 18             | 3,5              | 2,7  | 2,65 | H0211009.0202     | H0211001.0202 | H0201001.0202           |
|                        | 3,5 x 0,35 | 45             | 8              | 20             | 4                | 3    | 3,15 |                   |               |                         |
|                        | 4 x 0,35   | 45             | 9              | 22             | 4,5              | 3,4  | 3,65 | H0211009.0209     | H0211001.0209 | H0201001.0209           |
|                        | 4 x 0,5    | 45             | 9              | 22             | 4,5              | 3,4  | 3,5  | H0211009.0210     | H0211001.0210 | H0201001.0210           |
|                        | 4,5 x 0,5  | 50             | 10             | 24             | 6                | 4,9  | 4    |                   |               |                         |
|                        | 5 x 0,5    | 50             | 11             | 25             | 6                | 4,9  | 4,5  | H0211009.0218     | H0211001.0218 | H0201001.0218           |
|                        | 6 x 0,5    | 56             | 12             | 27             | 6                | 4,9  | 5,5  | H0211009.0228     | H0211001.0228 | H0201001.0228           |
|                        | 6 x 0,75   | 56             | 12             | 27             | 6                | 4,9  | 5,2  | H0211009.0229     | H0211001.0229 | H0201001.0229           |
|                        | 7 x 0,75   | 56             | 14             | —              | 6                | 4,9  | 6,2  |                   |               |                         |
|                        | 8 x 0,5    | 56             | 14             | —              | 6                | 4,9  | 7,5  | H0211009.0249     | H0211001.0249 | H0201001.0249           |
|                        | 8 x 0,75   | 56             | 14             | —              | 6                | 4,9  | 7,2  | H0211009.0250     | H0211001.0250 | H0201001.0250           |
|                        | 8 x 1      | 63             | 17             | —              | 6                | 4,9  | 7    | H0211009.0251     | H0211001.0251 | H0201001.0251           |
|                        | 9 x 1      | 63             | 17             | —              | 7                | 5,5  | 8    |                   |               |                         |
|                        | 10 x 0,75  | 63             | 18             | —              | 7                | 5,5  | 9,2  | H0211009.0275     | H0211001.0275 | H0201001.0275           |
|                        | 10 x 1     | 63             | 18             | —              | 7                | 5,5  | 9    | H0211009.0276     | H0211001.0276 | H0201001.0276           |
|                        | 10 x 1,25  | 70             | 22             | —              | 7                | 5,5  | 8,8  | H0211009.0277     | H0211001.0277 | H0201001.0277           |
|                        | 11 x 1     | 63             | 18             | —              | 8                | 6,2  | 10   |                   |               |                         |
|                        | 12 x 1     | 70             | 18             | —              | 9                | 7    | 11   | H0211009.0301     | H0211001.0301 | H0201001.0301           |
|                        | 12 x 1,25  | 70             | 20             | —              | 9                | 7    | 10,8 | H0211009.0302     | H0211001.0302 | H0201001.0302           |
|                        | 12 x 1,5   | 70             | 20             | —              | 9                | 7    | 10,5 | H0211009.0303     | H0211001.0303 | H0201001.0303           |
|                        | 13 x 1     | 70             | 18             | —              | 11               | 9    | 12   |                   |               |                         |
|                        | 14 x 1     | 70             | 18             | —              | 11               | 9    | 13   | H0211009.0329     | H0211001.0329 | H0201001.0329           |
|                        | 14 x 1,25  | 70             | 20             | —              | 11               | 9    | 12,8 | H0211009.0330     | H0211001.0330 | H0201001.0330           |
|                        | 14 x 1,5   | 70             | 20             | —              | 11               | 9    | 12,5 | H0211009.0331     | H0211001.0331 | H0201001.0331           |
|                        | 15 x 1     | 70             | 18             | —              | 12               | 9    | 14   |                   |               |                         |
|                        | 15 x 1,5   | 70             | 20             | —              | 12               | 9    | 13,5 |                   |               |                         |
|                        | 16 x 1     | 70             | 18             | —              | 12               | 9    | 15   | H0211009.0357     | H0211001.0357 | H0201001.0357           |
|                        | 16 x 1,5   | 70             | 20             | —              | 12               | 9    | 14,5 | H0211009.0359     | H0211001.0359 | H0201001.0359           |
|                        | 18 x 1     | 80             | 18             | —              | 14               | 11   | 17   | H0211009.0388     | H0211001.0388 | H0201001.0388           |
|                        | 18 x 1,5   | 80             | 22             | —              | 14               | 11   | 16,5 | H0211009.0390     | H0211001.0390 | H0201001.0390           |
|                        | 18 x 2     | 80             | 22             | —              | 14               | 11   | 16   | H0211009.0391     | H0211001.0391 | H0201001.0391           |
|                        | 20 x 1     | 80             | 18             | —              | 16               | 12   | 19   | H0211009.0420     | H0211001.0420 | H0201001.0420           |
|                        | 20 x 1,5   | 80             | 22             | —              | 16               | 12   | 18,5 | H0211009.0422     | H0211001.0422 | H0201001.0422           |
|                        | 20 x 2     | 80             | 22             | —              | 16               | 12   | 18   | H0211009.0423     | H0211001.0423 | H0201001.0423           |
|                        | 22 x 1     | 80             | 18             | —              | 18               | 14,5 | 21   | H0211009.0436     | H0211001.0436 | H0201001.0436           |
|                        | 22 x 1,5   | 80             | 22             | —              | 18               | 14,5 | 20,5 | H0211009.0438     | H0211001.0438 | H0201001.0438           |
|                        | 22 x 2     | 80             | 22             | —              | 18               | 14,5 | 20   | H0211009.0439     | H0211001.0439 | H0201001.0439           |
|                        | 24 x 1     | 90             | 18             | —              | 18               | 14,5 | 23   | H0211009.0450     | H0211001.0450 | H0201001.0450           |

**MF**

DIN 13

DIN  
2181Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

» 78



P 1.1-3.1

P 1.1-3.1

P 1.1-3.1

|   | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □    |      | HGB-Set<br>V-Nr.1 | HGB-Set<br>F  | HGB-Set-2S<br>(Nr.1, F) |
|---|------------------------|---------|----------------|----------------|----------------|------------------|------|------|-------------------|---------------|-------------------------|
| M | 24                     | x 1,5   | 90             | 22             | –              | 18               | 14,5 | 22,5 | H0211009.0452     | H0211001.0452 | H0201001.0452           |
|   | 24                     | x 2     | 90             | 22             | –              | 18               | 14,5 | 22   | H0211009.0453     | H0211001.0453 | H0201001.0453           |
|   | 25                     | x 1,5   | 90             | 22             | –              | 18               | 14,5 | 23,5 | H0211009.0458     | H0211001.0458 | H0201001.0458           |
|   | 26                     | x 1,5   | 90             | 22             | –              | 18               | 14,5 | 24,5 | H0211009.0464     | H0211001.0464 | H0201001.0464           |
|   | 27                     | x 1,5   | 90             | 22             | –              | 20               | 16   | 25,5 | H0211009.0470     | H0211001.0470 | H0201001.0470           |
|   | 27                     | x 2     | 90             | 22             | –              | 20               | 16   | 25   | H0211009.0471     | H0211001.0471 | H0201001.0471           |
|   | 28                     | x 1,5   | 90             | 22             | –              | 20               | 16   | 26,5 | H0211009.0476     | H0211001.0476 | H0201001.0476           |
|   | 30                     | x 1     | 90             | 18             | –              | 22               | 18   | 29   |                   |               |                         |
|   | 30                     | x 1,5   | 90             | 22             | –              | 22               | 18   | 28,5 | H0211009.0490     | H0211001.0490 | H0201001.0490           |
|   | 30                     | x 2     | 90             | 22             | –              | 22               | 18   | 28   | H0211009.0491     | H0211001.0491 | H0201001.0491           |
|   | 32                     | x 1,5   | 90             | 22             | –              | 22               | 18   | 30,5 | H0211009.0504     | H0211001.0504 | H0201001.0504           |
|   | 33                     | x 1,5   | 100            | 25             | –              | 25               | 20   | 31,5 | H0211009.0511     | H0211001.0511 | H0201001.0511           |
|   | 33                     | x 2     | 100            | 25             | –              | 25               | 20   | 31   | H0211009.0512     | H0211001.0512 | H0201001.0512           |
|   | 34                     | x 1,5   | 100            | 25             | –              | 28               | 22   | 32,5 | H0211009.0518     | H0211001.0518 | H0201001.0518           |
|   | 35                     | x 1,5   | 100            | 25             | –              | 28               | 22   | 33,5 | H0211009.0525     | H0211001.0525 | H0201001.0525           |
|   | 36                     | x 1,5   | 100            | 25             | –              | 28               | 22   | 34,5 | H0211009.0532     | H0211001.0532 | H0201001.0532           |
|   | 36                     | x 2     | 125            | 30             | –              | 28               | 22   | 34   | H0211009.0533     | H0211001.0533 | H0201001.0533           |
|   | 36                     | x 3     | 125            | 36             | –              | 28               | 22   | 33   | H0211009.0534     | H0211001.0534 | H0201001.0534           |
|   | 38                     | x 1,5   | 100            | 25             | –              | 28               | 22   | 36,5 | H0211009.0546     | H0211001.0546 | H0201001.0546           |
|   | 39                     | x 2     | 125            | 30             | –              | 32               | 24   | 37   | H0211009.0554     | H0211001.0554 | H0201001.0554           |
|   | 39                     | x 3     | 125            | 36             | –              | 32               | 24   | 36   | H0211009.0555     | H0211001.0555 | H0201001.0555           |
|   | 40                     | x 1,5   | 110            | 25             | –              | 32               | 24   | 38,5 | H0211009.0560     | H0211001.0560 | H0201001.0560           |
|   | 40                     | x 2     | 125            | 30             | –              | 32               | 24   | 38   | H0211009.0561     | H0211001.0561 | H0201001.0561           |
|   | 40                     | x 3     | 125            | 36             | –              | 32               | 24   | 37   | H0211009.0562     | H0211001.0562 | H0201001.0562           |
|   | 42                     | x 1,5   | 110            | 25             | –              | 32               | 24   | 40,5 | H0211009.0574     | H0211001.0574 | H0201001.0574           |
|   | 42                     | x 2     | 125            | 30             | –              | 32               | 24   | 40   | H0211009.0575     | H0211001.0575 | H0201001.0575           |
|   | 42                     | x 3     | 125            | 36             | –              | 32               | 24   | 39   | H0211009.0576     | H0211001.0576 | H0201001.0576           |
|   | 45                     | x 1,5   | 110            | 25             | –              | 36               | 29   | 43,5 | H0211009.0595     | H0211001.0595 | H0201001.0595           |
|   | 45                     | x 2     | 125            | 30             | –              | 36               | 29   | 43   | H0211009.0596     | H0211001.0596 | H0201001.0596           |
|   | 45                     | x 3     | 125            | 36             | –              | 36               | 29   | 42   | H0211009.0597     | H0211001.0597 | H0201001.0597           |
|   | 48                     | x 1,5   | 140            | 25             | –              | 36               | 29   | 46,5 | H0211009.0616     | H0211001.0616 | H0201001.0616           |
|   | 48                     | x 2     | 140            | 30             | –              | 36               | 29   | 46   | H0211009.0617     | H0211001.0617 | H0201001.0617           |
|   | 48                     | x 3     | 140            | 36             | –              | 36               | 29   | 45   | H0211009.0618     | H0211001.0618 | H0201001.0618           |
|   | 50                     | x 1,5   | 140            | 25             | –              | 36               | 29   | 48,5 | H0211009.0630     | H0211001.0630 | H0201001.0630           |
|   | 50                     | x 2     | 140            | 30             | –              | 36               | 29   | 48   | H0211009.0631     | H0211001.0631 | H0201001.0631           |
|   | 50                     | x 3     | 140            | 36             | –              | 36               | 29   | 47   | H0211009.0632     | H0211001.0632 | H0201001.0632           |
|   | 52                     | x 1,5   | 140            | 25             | –              | 40               | 32   | 50,5 | H0211009.0644     | H0211001.0644 | H0201001.0644           |
|   | 52                     | x 2     | 140            | 32             | –              | 40               | 32   | 50   | H0211009.0645     | H0211001.0645 | H0201001.0645           |
|   | 52                     | x 3     | 140            | 40             | –              | 40               | 32   | 49   | H0211009.0646     | H0211001.0646 | H0201001.0646           |

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

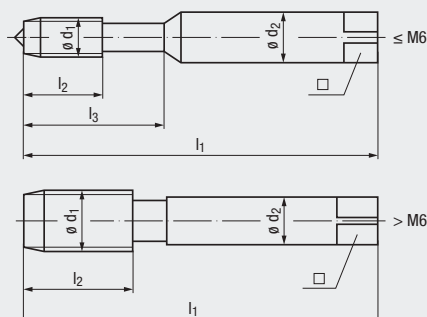
Tr, Tr-F  
RdZubehör  
Accessories

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MF

DIN 13

DIN  
2181



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

Technische Informationen  
Technical information

EG (STI)

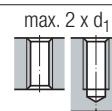
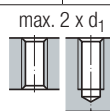
SELF-LOCK

Tr, Tr-F  
Rd

Zubehör  
Accessories

|         |         |         |         |
|---------|---------|---------|---------|
| HSSE    | 6HX     | HSSE    | 6HX     |
| LH      | HSSE    | LH      | HSSE    |
| D / 3-4 | C / 2-3 | C / 2-3 | C / 2-3 |
| O / P   | O / P   | O / P   | O / P   |

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

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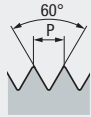
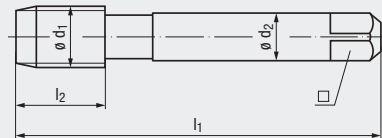
P 1.1-3.1

| ø d <sub>1</sub><br>mm | P<br>mm   | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □    |      |  | HGB-Set<br>LH-V-Nr.1 | HGB-Set<br>LH-F |  | HGB-Set-LH-2S<br>(Nr.1, F) |
|------------------------|-----------|----------------|----------------|----------------|------------------|------|------|--|----------------------|-----------------|--|----------------------------|
| <b>M</b>               | 6 x 0,5   | 56             | 12             | 27             | 6                | 4,9  | 5,5  |  |                      |                 |  |                            |
|                        | 6 x 0,75  | 56             | 12             | 27             | 6                | 4,9  | 5,2  |  |                      |                 |  |                            |
|                        | 7 x 0,75  | 56             | 14             | —              | 6                | 4,9  | 6,2  |  |                      |                 |  |                            |
|                        | 8 x 0,5   | 56             | 14             | —              | 6                | 4,9  | 7,5  |  |                      |                 |  |                            |
|                        | 8 x 0,75  | 56             | 14             | —              | 6                | 4,9  | 7,2  |  |                      |                 |  |                            |
|                        | 8 x 1     | 63             | 17             | —              | 6                | 4,9  | 7    |  | H0211059.0251        | H0211051.0251   |  | H0201051.0251              |
|                        | 9 x 1     | 63             | 17             | —              | 7                | 5,5  | 8    |  |                      |                 |  |                            |
|                        | 10 x 0,75 | 63             | 18             | —              | 7                | 5,5  | 9,2  |  |                      |                 |  |                            |
|                        | 10 x 1    | 63             | 18             | —              | 7                | 5,5  | 9    |  | H0211059.0276        | H0211051.0276   |  | H0201051.0276              |
|                        | 10 x 1,25 | 70             | 22             | —              | 7                | 5,5  | 8,8  |  |                      |                 |  |                            |
|                        | 11 x 1    | 63             | 18             | —              | 8                | 6,2  | 10   |  |                      |                 |  |                            |
|                        | 12 x 1    | 70             | 18             | —              | 9                | 7    | 11   |  | H0211059.0301        | H0211051.0301   |  | H0201051.0301              |
|                        | 12 x 1,25 | 70             | 20             | —              | 9                | 7    | 10,8 |  |                      |                 |  |                            |
|                        | 12 x 1,5  | 70             | 20             | —              | 9                | 7    | 10,5 |  | H0211059.0303        | H0211051.0303   |  | H0201051.0303              |
|                        | 13 x 1    | 70             | 18             | —              | 11               | 9    | 12   |  |                      |                 |  |                            |
|                        | 14 x 1    | 70             | 18             | —              | 11               | 9    | 13   |  |                      |                 |  |                            |
|                        | 14 x 1,25 | 70             | 20             | —              | 11               | 9    | 12,8 |  |                      |                 |  |                            |
|                        | 14 x 1,5  | 70             | 20             | —              | 11               | 9    | 12,5 |  | H0211059.0331        | H0211051.0331   |  | H0201051.0331              |
|                        | 15 x 1    | 70             | 18             | —              | 12               | 9    | 14   |  |                      |                 |  |                            |
|                        | 15 x 1,5  | 70             | 20             | —              | 12               | 9    | 13,5 |  |                      |                 |  |                            |
|                        | 16 x 1    | 70             | 18             | —              | 12               | 9    | 15   |  |                      |                 |  |                            |
|                        | 16 x 1,5  | 70             | 20             | —              | 12               | 9    | 14,5 |  | H0211059.0359        | H0211051.0359   |  | H0201051.0359              |
|                        | 18 x 1    | 80             | 18             | —              | 14               | 11   | 17   |  |                      |                 |  |                            |
|                        | 18 x 1,5  | 80             | 22             | —              | 14               | 11   | 16,5 |  | H0211059.0390        | H0211051.0390   |  | H0201051.0390              |
|                        | 18 x 2    | 80             | 22             | —              | 14               | 11   | 16   |  |                      |                 |  |                            |
|                        | 20 x 1    | 80             | 18             | —              | 16               | 12   | 19   |  |                      |                 |  |                            |
|                        | 20 x 1,5  | 80             | 22             | —              | 16               | 12   | 18,5 |  | H0211059.0422        | H0211051.0422   |  | H0201051.0422              |
|                        | 20 x 2    | 80             | 22             | —              | 16               | 12   | 18   |  |                      |                 |  |                            |
|                        | 22 x 1    | 80             | 18             | —              | 18               | 14,5 | 21   |  |                      |                 |  |                            |
|                        | 22 x 1,5  | 80             | 22             | —              | 18               | 14,5 | 20,5 |  | H0211059.0438        | H0211051.0438   |  | H0201051.0438              |
|                        | 22 x 2    | 80             | 22             | —              | 18               | 14,5 | 20   |  |                      |                 |  |                            |
|                        | 24 x 1    | 90             | 18             | —              | 18               | 14,5 | 23   |  |                      |                 |  |                            |
|                        | 24 x 1,5  | 90             | 22             | —              | 18               | 14,5 | 22,5 |  | H0211059.0452        | H0211051.0452   |  | H0201051.0452              |
|                        | 24 x 2    | 90             | 22             | —              | 18               | 14,5 | 22   |  |                      |                 |  |                            |



**MF**

DIN 13

DIN  
2181Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

VHM/KHM

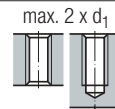
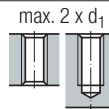
C / ≈3  
O / P

6HX

VHM/KHM

C / ≈3  
O / P

VHM/KHM

C / ≈3  
O / PGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

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P 5.1  
N 2.8, 5.2  
H 1.1-1.3P 5.1  
N 2.8, 5.2  
H 1.1-1.3P 5.1  
N 2.8, 5.2  
H 1.1-1.3

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □   |      | VHM/KHM-Set<br>V-Nr.1 | VHM/KHM-Set<br>F | VHM/KHM-Set-2S<br>(Nr.1, F) |
|------------------------|---------|----------------|----------------|------------------|-----|------|-----------------------|------------------|-----------------------------|
| <b>M</b> 8             | x 1     | 63             | 10             | 6                | 4,9 | 7    | H0330909.0251         | H0330901.0251    | H0320901.0251               |
| 10                     | x 1     | 63             | 10             | 7                | 5,5 | 9    | H0330909.0276         | H0330901.0276    | H0320901.0276               |
| 12                     | x 1,5   | 70             | 15             | 9                | 7   | 10,5 | H0330909.0303         | H0330901.0303    | H0320901.0303               |
| 14                     | x 1,5   | 70             | 15             | 11               | 9   | 12,5 | H0330909.0331         | H0330901.0331    | H0320901.0331               |
| 16                     | x 1,5   | 70             | 15             | 12               | 9   | 14,5 | H0330909.0359         | H0330901.0359    | H0320901.0359               |

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

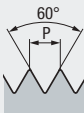
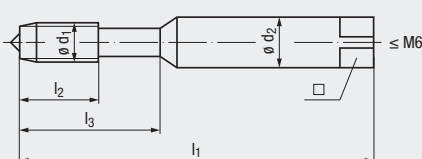
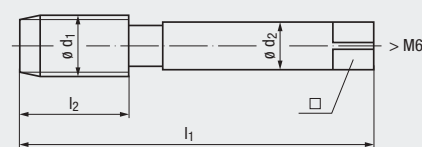
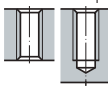
Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

| Product Finder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |                |                |                |                  |      |                                                                                     |  |  |  |                                                                                  |                                    |                                    |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------|----------------|----------------|------------------|------|-------------------------------------------------------------------------------------|--|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------|----------------|------------------|---|-------------------------------------------------------------------------------------|-----|--------|----|----|----|---|-----|-----|---|--------|----|----|---|---|-----|-----|---|-----|----|----|---|---|-----|---|----|-----|----|----|---|---|-----|---|----|-----|----|----|---|---|---|----|----|-------|----|----|---|---|---|------|----|-------|----|----|---|----|---|------|----|-------|----|----|---|----|---|------|----|-------|----|----|---|----|----|------|----|-------|----|----|---|----|----|------|----|-------|----|----|---|----|------|------|----|-------|----|----|---|----|------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| V <sub>c</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |                |                |                |                  |      |                                                                                     |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| M                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |         |                |                |                |                  |      |                                                                                     |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| MF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                |                |                |                  |      |                                                                                     |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| UNC<br>UN-8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |                |                |                |                  |      |                                                                                     |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| UNF<br>UNEF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |                |                |                |                  |      |                                                                                     |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| G, Rp<br>NPSM, NPSF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |                |                |                |                  |      |                                                                                     |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| NPT, NPTF<br>Rc, W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                |                |                |                  |      |                                                                                     |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| BSW, BSF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |                |                |                |                  |      |                                                                                     |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| Pg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                |                |                |                  |      |                                                                                     |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| MJ<br>UNJC, UNJF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |                |                |                |                  |      |                                                                                     |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| EG (STI)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |                |                |                |                  |      |                                                                                     |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| SELF-LOCK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |         |                |                |                |                  |      |                                                                                     |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| Tr, Tr-F<br>Rd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |                |                |                |                  |      |                                                                                     |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| Zubehör<br>Accessories                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |         |                |                |                |                  |      |                                                                                     |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| <div><div><div><div><div></div><div>MF</div></div><div>DIN 13</div></div><div></div><div></div></div><div><div>Toleranz · Tolerance<br/>Beschichtung · Coating<br/>Schneidstoff · Cutting material</div><div></div></div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |                |                |                |                  |      |                                                                                     |  |  |  |  1)                                                                             |                                   |                                   |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| <div>Technische Informationen<br/>Technical information</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         |                |                |                |                  |      |                                                                                     |  |  |  | HSSE                                                                                                                                                             | HSSE                                                                                                                 | 6HX<br>HSSE                                                                                                          |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| <div>Gewindetiefe und Lochform<br/>Thread depth and hole type</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |                |                |                |                  |      |                                                                                     |  |  |  | C / 2-3<br>O / P                                                                                                                                                 | C / 2-3<br>O / P                                                                                                     | C / 2-3<br>O / P                                                                                                     |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| <div>Einsatzgebiete – Material<br/>Applications – material</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |                |                |                |                  |      |                                                                                     |  |  |  | <div><div><div><div>max. 2 x d<sub>1</sub></div><div></div></div></div></div> |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| <div>» 78</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |                |                |                |                  |      |                                                                                     |  |  |  | <div><div>P 1.1-5.1</div><div>M 1.1-4.1</div><div>K 1.1-4.2</div><div>N 1.1-2.6</div><div>S 2.1-2.2, 2.4</div></div>                                             | <div><div>P 1.1-5.1</div><div>M 1.1-4.1</div><div>K 1.1-4.2</div><div>N 1.1-2.6</div><div>S 2.1-2.2, 2.4</div></div> | <div><div>P 1.1-5.1</div><div>M 1.1-4.1</div><div>K 1.1-4.2</div><div>N 1.1-2.6</div><div>S 2.1-2.2, 2.4</div></div> |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| <table><tr><th>ø d<sub>1</sub><br/>mm</th><th>P<br/>mm</th><th>l<sub>1</sub></th><th>l<sub>2</sub></th><th>l<sub>3</sub></th><th>ø d<sub>2</sub></th><th>□</th><th></th></tr><tr><td>M 6</td><td>x 0,75</td><td>56</td><td>12</td><td>27</td><td>6</td><td>4,9</td><td>5,2</td></tr><tr><td>8</td><td>x 0,75</td><td>56</td><td>14</td><td>—</td><td>6</td><td>4,9</td><td>7,2</td></tr><tr><td>8</td><td>x 1</td><td>63</td><td>17</td><td>—</td><td>6</td><td>4,9</td><td>7</td></tr><tr><td>10</td><td>x 1</td><td>63</td><td>18</td><td>—</td><td>7</td><td>5,5</td><td>9</td></tr><tr><td>12</td><td>x 1</td><td>70</td><td>18</td><td>—</td><td>9</td><td>7</td><td>11</td></tr><tr><td>12</td><td>x 1,5</td><td>70</td><td>20</td><td>—</td><td>9</td><td>7</td><td>10,5</td></tr><tr><td>14</td><td>x 1,5</td><td>70</td><td>20</td><td>—</td><td>11</td><td>9</td><td>12,5</td></tr><tr><td>16</td><td>x 1,5</td><td>70</td><td>20</td><td>—</td><td>12</td><td>9</td><td>14,5</td></tr><tr><td>18</td><td>x 1,5</td><td>80</td><td>22</td><td>—</td><td>14</td><td>11</td><td>16,5</td></tr><tr><td>20</td><td>x 1,5</td><td>80</td><td>22</td><td>—</td><td>16</td><td>12</td><td>18,5</td></tr><tr><td>22</td><td>x 1,5</td><td>80</td><td>22</td><td>—</td><td>18</td><td>14,5</td><td>20,5</td></tr><tr><td>24</td><td>x 1,5</td><td>90</td><td>22</td><td>—</td><td>18</td><td>14,5</td><td>22,5</td></tr></table> |         |                |                |                |                  |      |                                                                                     |  |  |  | ø d <sub>1</sub><br>mm                                                                                                                                           | P<br>mm                                                                                                              | l <sub>1</sub>                                                                                                       | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □ |  | M 6 | x 0,75 | 56 | 12 | 27 | 6 | 4,9 | 5,2 | 8 | x 0,75 | 56 | 14 | — | 6 | 4,9 | 7,2 | 8 | x 1 | 63 | 17 | — | 6 | 4,9 | 7 | 10 | x 1 | 63 | 18 | — | 7 | 5,5 | 9 | 12 | x 1 | 70 | 18 | — | 9 | 7 | 11 | 12 | x 1,5 | 70 | 20 | — | 9 | 7 | 10,5 | 14 | x 1,5 | 70 | 20 | — | 11 | 9 | 12,5 | 16 | x 1,5 | 70 | 20 | — | 12 | 9 | 14,5 | 18 | x 1,5 | 80 | 22 | — | 14 | 11 | 16,5 | 20 | x 1,5 | 80 | 22 | — | 16 | 12 | 18,5 | 22 | x 1,5 | 80 | 22 | — | 18 | 14,5 | 20,5 | 24 | x 1,5 | 90 | 22 | — | 18 | 14,5 | 22,5 | <div>WM-Set<br/>V-Nr.1Z</div> <div>H0463009.0229<br/>H0463009.0250<br/><b>H0463009.0251</b><br/><b>H0463009.0276</b><br/>H0463009.0301<br/><b>H0463009.0303</b><br/><b>H0463009.0331</b><br/><b>H0463009.0359</b><br/>H0463009.0390<br/>H0463009.0422<br/>H0463009.0438<br/>H0463009.0452</div> | <div>WM-Set<br/>V-Nr.1</div> <div>H0473009.0229<br/>H0473009.0250<br/><b>H0473009.0251</b><br/><b>H0473009.0276</b><br/>H0473009.0301<br/><b>H0473009.0303</b><br/><b>H0473009.0331</b><br/><b>H0473009.0359</b><br/>H0473009.0390<br/>H0473009.0422<br/>H0473009.0438<br/>H0473009.0452</div> | <div>WM-Set<br/>F</div> <div>H0473001.0229<br/>H0473001.0250<br/><b>H0473001.0251</b><br/><b>H0473001.0276</b><br/>H0473001.0301<br/><b>H0473001.0303</b><br/><b>H0473001.0331</b><br/><b>H0473001.0359</b><br/>H0473001.0390<br/>H0473001.0422<br/>H0473001.0438<br/>H0473001.0452</div> |  |
| ø d <sub>1</sub><br>mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □    |  |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| M 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | x 0,75  | 56             | 12             | 27             | 6                | 4,9  | 5,2                                                                                 |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | x 0,75  | 56             | 14             | —              | 6                | 4,9  | 7,2                                                                                 |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | x 1     | 63             | 17             | —              | 6                | 4,9  | 7                                                                                   |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | x 1     | 63             | 18             | —              | 7                | 5,5  | 9                                                                                   |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | x 1     | 70             | 18             | —              | 9                | 7    | 11                                                                                  |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | x 1,5   | 70             | 20             | —              | 9                | 7    | 10,5                                                                                |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | x 1,5   | 70             | 20             | —              | 11               | 9    | 12,5                                                                                |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | x 1,5   | 70             | 20             | —              | 12               | 9    | 14,5                                                                                |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | x 1,5   | 80             | 22             | —              | 14               | 11   | 16,5                                                                                |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | x 1,5   | 80             | 22             | —              | 16               | 12   | 18,5                                                                                |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | x 1,5   | 80             | 22             | —              | 18               | 14,5 | 20,5                                                                                |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |
| 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | x 1,5   | 90             | 22             | —              | 18               | 14,5 | 22,5                                                                                |  |  |  |                                                                                                                                                                  |                                                                                                                      |                                                                                                                      |                |                |                  |   |                                                                                     |     |        |    |    |    |   |     |     |   |        |    |    |   |   |     |     |   |     |    |    |   |   |     |   |    |     |    |    |   |   |     |   |    |     |    |    |   |   |   |    |    |       |    |    |   |   |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |   |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |    |      |    |       |    |    |   |    |      |      |    |       |    |    |   |    |      |      |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |  |

1) Der Vorschneider Nr.1Z mit Führungszapfen ist eine zusätzliche Hilfe zum winkelrechten Anschneiden von Hand. Er kann z.B. auf der Maschine weggelassen werden. Die Profilabstufung von Nr.1Z und Nr.1 ist gleich.  
The taper tap No. 1Z with cylindrical pilot is an additional aid for true alignment especially when tapping by hand. It can be deleted when tapping by machine. The profile graduation of No.1Z, and No.1 is the same.



2)



6HX

6HX

HSSE

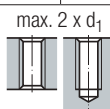
HSSE

C / 2-3

C / 2-3

O / P

O / P

**P** 1.1-5.1**M** 1.1-4.1**K** 1.1-4.2**N** 1.1-2.6**S** 2.1-2.2, 2.4**P** 1.1-5.1**M** 1.1-4.1**K** 1.1-4.2**N** 1.1-2.6**S** 2.1-2.2, 2.4**WM-Set-3S**  
(Nr.1Z, Nr.1, F)**WM-Set-2S**  
(Nr.1, F)

H0453001.0229

H0483001.0229

H0453001.0250

H0483001.0250

**H0453001.0251****H0483001.0251****H0453001.0276****H0483001.0276**

H0453001.0301

H0483001.0301

**H0453001.0303****H0483001.0303****H0453001.0331****H0483001.0331****H0453001.0359****H0483001.0359**

H0453001.0390

H0483001.0390

H0453001.0422

H0483001.0422

H0453001.0438

H0483001.0438

H0453001.0452

H0483001.0452

|          |          |
|----------|----------|
| <b>M</b> | 6 x 0,75 |
|          | 8 x 0,75 |
|          | 8 x 1    |
|          | 10 x 1   |
|          | 12 x 1   |
|          | 12 x 1,5 |
|          | 14 x 1,5 |
|          | 16 x 1,5 |
|          | 18 x 1,5 |
|          | 20 x 1,5 |
|          | 22 x 1,5 |
|          | 24 x 1,5 |

2) Beim Gewindebohren von Hand in Durchgangslöcher entfällt Nr.1  
No.1 is not needed when tapping in through holes by hand

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

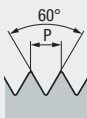
Verstellbare Windeisen siehe Seite 305

Adjustable tap wrenches, see page 305

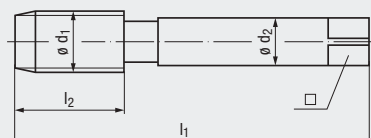
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MF

DIN 13



Für dünnwandige Messing-Rohre  
For thin-walled brass tubes



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

MS  
Copper-zinc  
alloys



6HX

6HX +0,1 2)

6GX

HSSE

HSSE

HSSE

max. 1

max. 1

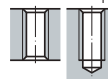
max. 1

E

E

E

max. 1 x d<sub>1</sub>



N 2,3, 2,6

N 2,3, 2,6

N 2,3, 2,6

| ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □     |      | AUT-A<br>MS-R | AUT-A<br>MS-R | AUT-A<br>MS-R |
|------------------------|---------|----------------|----------------|------------------|-------|------|---------------|---------------|---------------|
| <b>M</b>               |         |                |                |                  |       |      |               |               |               |
| 8                      | x       | 1              | 63             | 17               | 6     | 4,9  | 7             | A6622501.0251 | A6622521.0251 |
| 10                     | x       | 1              | 63             | 18               | 7     | 5,5  | 9             | A6622501.0276 | A6622521.0276 |
| 12                     | x       | 1              | 70             | 18               | 9     | 7    | 11            | A6622501.0301 | A6622521.0301 |
| 12                     | x       | 1,5            | 70             | 20               | 9     | 7    | 10,5          | A6622501.0303 | A6622521.0303 |
| 14                     | x       | 1              | 70             | 18               | 10 1) | 8    | 13            |               | A6622521.0329 |
| 14                     | x       | 1,5            | 70             | 20               | 10 1) | 8    | 12,5          | A6622501.0331 | A6622521.0331 |
| 15                     | x       | 1              | 70             | 18               | 12    | 9    | 14            |               | A6622521.0343 |
| 16                     | x       | 1,5            | 70             | 20               | 12    | 9    | 14,5          | A6622501.0359 | A6622521.0359 |
| 17                     | x       | 1              | 70             | 18               | 12    | 9    | 16            |               | A6622521.0372 |
| 18                     | x       | 1,5            | 80             | 22               | 12 1) | 9    | 16,5          | A6622501.0390 | A6622521.0390 |
| 20                     | x       | 1,5            | 80             | 22               | 15 1) | 12   | 18,5          | A6622501.0422 | A6622521.0422 |
| 22                     | x       | 1,5            | 80             | 22               | 15 1) | 12   | 20,5          | A6622501.0438 | A6622521.0438 |
| 24                     | x       | 1,5            | 90             | 22               | 18    | 14,5 | 22,5          | A6622501.0452 | A6622521.0452 |
| 26                     | x       | 1,5            | 90             | 22               | 18    | 14,5 | 24,5          | A6622501.0464 | A6622521.0464 |
| 28                     | x       | 1,5            | 90             | 22               | 18 1) | 14,5 | 26,5          | A6622501.0476 | A6622521.0476 |
| 30                     | x       | 1,5            | 90             | 22               | 18 1) | 14,5 | 28,5          | A6622501.0490 | A6622521.0490 |

1) Spezieller AUT-Schaft  
Special shank for "AUT" taps

2) Vorbohrdurchmesser für Gewindebohrer mit Übermaß um 0,1 mm anheben  
Increase drill diameter for taps with oversize by 0.1 mm



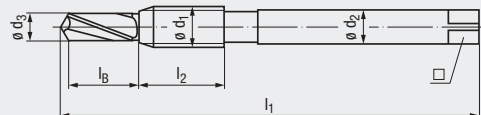
Automatengewindebohrer für  
Metrisches ISO-Regelgewinde DIN 13  
auf Anfrage

Taps for automatic lathes for  
ISO Metric coarse thread DIN 13,  
upon request



DIN 13

Normal lang  
Standard length



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

ISO 2/6H

HSSE

C / 2-3

E / 0

max. 1 x d<sub>1</sub>


P 2.1

N 2.2

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
Rd

Zubehör  
Accessories

## Normal lang · Standard length

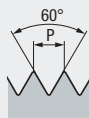
|          | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>B</sub> | ø d <sub>2</sub> | □   | ø d <sub>3</sub> | KOMBI<br>Normal-Ig |  |  |  |
|----------|------------------------|---------|----------------|----------------|----------------|------------------|-----|------------------|--------------------|--|--|--|
| <b>M</b> | 4                      | x 0,5   | 66             | 13             | 8,9            | 4,5              | 3,4 | 3,55             | M0601000.0210      |  |  |  |
|          | 5                      | x 0,5   | 75             | 15             | 10,7           | 6                | 4,9 | 4,55             |                    |  |  |  |
|          | 6                      | x 0,75  | 81             | 20             | 12,4           | 6                | 4,9 | 5,31             | M0601000.0229      |  |  |  |
|          | 8                      | x 0,75  | 93             | 12             | 17,8           | 6                | 4,9 | 7,31             |                    |  |  |  |
|          | 8                      | x 1     | 93             | 12             | 17,8           | 6                | 4,9 | 7,05             | M0601000.0251      |  |  |  |
|          | 10                     | x 1     | 99             | 14             | 19,2           | 7                | 5,5 | 9,05             | M0601000.0276      |  |  |  |
|          | 10                     | x 1,25  | 99             | 14             | 19,3           | 7                | 5,5 | 8,8              |                    |  |  |  |
|          | 12                     | x 1     | 106            | 14             | 21,6           | 9                | 7   | 11,05            |                    |  |  |  |
|          | 12                     | x 1,5   | 106            | 14             | 21,8           | 9                | 7   | 10,55            | M0601000.0303      |  |  |  |
|          | 14                     | x 1,5   | 114            | 15             | 24,2           | 11               | 9   | 12,55            | M0601000.0331      |  |  |  |
|          | 16                     | x 1,5   | 123            | 16             | 27,5           | 12               | 9   | 14,55            | M0601000.0359      |  |  |  |
|          | 18                     | x 1,5   | 132            | 18             | 30,9           | 14               | 11  | 16,55            |                    |  |  |  |
|          | 20                     | x 1,5   | 132            | 18             | 30,3           | 16               | 12  | 18,55            | M0601000.0422      |  |  |  |



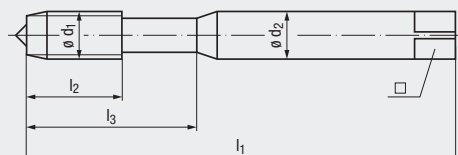
- Product Finder
- V<sub>c</sub>
- M
- MF
- UNC**  
UN-8
- UNF  
UNEF
- G, Rp  
NPSM, NPSF
- NPT, NPTF  
Rc, W
- BSW, BSF
- Pg
- MJ  
UNJC, UNJF
- EG (STI)
- SELF-LOCK
- Tr, Tr-F  
Rd
- Zubehör  
Accessories

# UNC

ASME B1.1



≈ DIN  
371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



**STEEL**  
Steel  
materials



2B

HSSE

B / 4-5

E / O



3B

HSSE

B / 4-5

E / O



l<sub>2</sub> ≈ 10 x P

2B

HSSE

R35

C / 2-3

E / O



l<sub>2</sub> ≈ 10 x P

2B

TIN

HSSE

R35

C / 2-3

E / O

Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

max. 3 x d<sub>1</sub>



max. 2,5 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

» 78

P 1.1-3.1  
N 2.2

P 1.1-3.1  
N 2.2

P 1.1-3.1  
N 2.2

P 1.1-3.1  
N 2.2

| ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □   |      | Rekord<br>1B-STEEL-L | Rekord<br>1B-STEEL-L | Enorm 1<br>STEEL | Enorm 1<br>STEEL<br>TIN |
|--------------------------|------------------|----------------|----------------|----------------|------------------|-----|------|----------------------|----------------------|------------------|-------------------------|
| Nr. 1 0.0730             | 64               | 45             | 7              | —              | 2,8              | 2,1 | 1,55 |                      |                      |                  |                         |
| Nr. 2 0.0860             | 56               | 45             | 7              | —              | 2,8              | 2,1 | 1,85 | B0208900.5001        |                      |                  |                         |
| Nr. 3 0.0990             | 48               | 50             | 9              | 14             | 2,8              | 2,1 | 2,1  | B0208900.5002        | B0208910.5002        |                  |                         |
| Nr. 4 0.1120             | 40               | 56             | 11             | 18             | 3,5              | 2,7 | 2,35 | B0208900.5003        | B0208910.5003        | B0501000.5003    | B0501400.5003           |
| Nr. 5 0.1250             | 40               | 56             | 11             | 18             | 3,5              | 2,7 | 2,65 | B0208900.5004        | B0208910.5004        |                  |                         |
| Nr. 6 0.1380             | 32               | 56             | 12             | 20             | 4                | 3   | 2,85 | B0208900.5005        | B0208910.5005        | B0501000.5005    | B0501400.5005           |
| Nr. 8 0.1640             | 32               | 63             | 13             | 21             | 4,5              | 3,4 | 3,5  | B0208900.5006        | B0208910.5006        | B0501000.5006    | B0501400.5006           |
| Nr. 10 0.1900            | 24               | 70             | 15             | 25             | 6                | 4,9 | 3,9  | B0208900.5007        | B0208910.5007        | B0501000.5007    | B0501400.5007           |
| Nr. 12 0.2160            | 24               | 80             | 16             | 30             | 6                | 4,9 | 4,5  | B0208900.5008        | B0208910.5008        |                  |                         |
| 1/4 0.2500               | 20               | 80             | 17             | 30             | 7                | 5,5 | 5,1  | B0208900.5009        | B0208910.5009        | B0501000.5009    | B0501400.5009           |
| 5/16 0.3125              | 18               | 90             | 20             | 35             | 8                | 6,2 | 6,6  | B0208900.5010        | B0208910.5010        | B0501000.5010    | B0501400.5010           |
| 3/8 0.3750               | 16               | 100            | 22             | 39             | 10               | 8   | 8    | B0208900.5011        | B0208910.5011        | B0501000.5011    | B0501400.5011           |
| ≈ DIN 376                |                  |                |                |                |                  |     |      | 208                  | 208                  | 208              | 208                     |

| VA<br>Stainless steel<br>materials                                                      |                                                                                         |                                                                                         |                                                                                         | INOX<br>Stainless steel<br>materials                                                    |  | H<br>Materials of high<br>tensile strength                                                | Product<br>Finder      |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|------------------------|
|        |        |        |        |        |  |        |                        |
|        |        |        |        |        |  |        | <b>V<sub>c</sub></b>   |
| 2B                                                                                      | 2B                                                                                      | 2B                                                                                      | 2B                                                                                      | new                                                                                     |  |                                                                                           | M                      |
| NT                                                                                      | TIN                                                                                     | GLT-1                                                                                   | HSSE                                                                                    |                                                                                         |  |                                                                                           | MF                     |
| HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                    |                                                                                         |  |                                                                                           | <b>UNC</b><br>UN-8     |
| B / 4-5                                                                                 | B / 4-5                                                                                 | B / 4-5                                                                                 | R35                                                                                     |                                                                                         |  |                                                                                           | UNF<br>UNEF            |
| E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                               | C / 2-3                                                                                 |                                                                                         |  |                                                                                           | G, Rp<br>NPSM, NPSF    |
|                                                                                         |                                                                                         |                                                                                         | E / O / P                                                                               |                                                                                         |  |                                                                                           | NPT, NPTF<br>Rc, W     |
| max. 3 x d <sub>1</sub>                                                                 |                                                                                         |                                                                                         | max. 2,5 x d <sub>1</sub>                                                               | max. 2,5 x d <sub>1</sub>                                                               |  | max. 2 x d <sub>1</sub>                                                                   | BSW, BSF               |
|       |                                                                                         |                                                                                         |       |       |  |       | Pg                     |
| <b>P</b> 2.1-3.1                                                                        | <b>P</b> 1.1-4.1                                                                        | <b>P</b> 1.1-4.1                                                                        | <b>P</b> 1.1-3.1                                                                        | <b>M</b> 1.1-2.1                                                                        |  | <b>K</b> 1.1-4.2                                                                          | MJ<br>UNJC, UNJF       |
| <b>N</b> 2.2, 2.5                                                                       |                                                                                         | <b>M</b> 1.1-4.1                                                                        |                                                                                         |                                                                                         |  | <b>N</b> 4.1                                                                              | EG (STI)               |
|                                                                                         |                                                                                         | <b>N</b> 2.2                                                                            |                                                                                         |                                                                                         |  |                                                                                           | SELF-LOCK              |
| Rekord<br>1B-VA<br>NT                                                                   | Rekord<br>1B-VA<br>TIN                                                                  | Rekord<br>1B-VA<br>GLT-1                                                                | Enorm 1<br>VA                                                                           | Enorm 1<br>INOX<br>GLT-201                                                              |  | Rekord<br>1A-H<br>NT                                                                      | Tr, Tr-F<br>Rd         |
| <b>B0203000.5001</b>                                                                    | B0203100.5001                                                                           | B020C300.5001                                                                           |                                                                                         |                                                                                         |  |                                                                                           | Zubehör<br>Accessories |
| <b>B0203000.5003</b>                                                                    | B0203100.5003                                                                           | B020C300.5003                                                                           | <b>B0503000.5003</b>                                                                    | <b>B050J300.5003</b>                                                                    |  | <b>B0100501.5003</b>                                                                      | Nr. 1 - 64             |
| <b>B0203000.5005</b>                                                                    | B0203100.5005                                                                           | B020C300.5005                                                                           | <b>B0503000.5005</b>                                                                    | <b>B050J300.5005</b>                                                                    |  | B0100501.5004                                                                             | Nr. 2 - 56             |
| <b>B0203000.5006</b>                                                                    | B0203100.5006                                                                           | B020C300.5006                                                                           | <b>B0503000.5006</b>                                                                    | <b>B050J300.5006</b>                                                                    |  | <b>B0100501.5005</b>                                                                      | Nr. 3 - 48             |
| <b>B0203000.5007</b>                                                                    | B0203100.5007                                                                           | B020C300.5007                                                                           | <b>B0503000.5007</b>                                                                    | <b>B050J300.5007</b>                                                                    |  | <b>B0100501.5006</b>                                                                      | Nr. 4 - 40             |
| <b>B0203000.5009</b>                                                                    | B0203100.5009                                                                           | B020C300.5009                                                                           | <b>B0503000.5009</b>                                                                    | <b>B050J300.5009</b>                                                                    |  | B0100501.5008                                                                             | Nr. 5 - 40             |
| <b>B0203000.5010</b>                                                                    | B0203100.5010                                                                           | B020C300.5010                                                                           | <b>B0503000.5010</b>                                                                    | <b>B050J300.5010</b>                                                                    |  | <b>B0100501.5009</b>                                                                      | Nr. 6 - 32             |
| <b>B0203000.5011</b>                                                                    | B0203100.5011                                                                           | B020C300.5011                                                                           | <b>B0503000.5011</b>                                                                    | <b>B050J300.5011</b>                                                                    |  | <b>B0100501.5010</b>                                                                      | Nr. 8 - 32             |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |  | <b>B0100501.5011</b>                                                                      | Nr. 10 - 24            |
|  209 |  209 |  209 |  209 |  209 |  |  209 | Nr. 12 - 24            |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |  |                                                                                           | 1/4 - 20               |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |  |                                                                                           | 5/16 - 18              |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |  |                                                                                           | 3/8 - 16               |

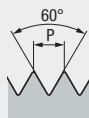




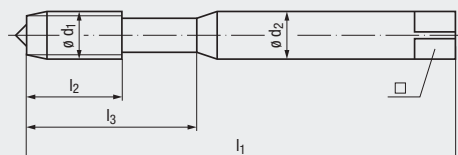
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| <b>UNC</b><br>UN-8     |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# UNC

ASME B1.1



≈ DIN 371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



**Z**  
CNC-controlled machines



new



new



2BX

GLT-1

**HSSE-PM**

R45

C / 2-3

E / O / P

2B

GLT-1

HSSE

R45

C / 2-3

E / O / P

2B

GLT-1

HSSE

R45

C / 2-3

E / O / P

2B

GLT-1

HSSE

R45

**E / 1,5-2**

E / O / P

Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

max. 3 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

» 78

**P** 1.1-4.1  
**M** 1.1-4.1  
**K** 1.1-3.2  
**N** 1.4, 2.1-2.2  
**N** 2.4-2.5  
**S** 1.1

**P** 1.1-3.1  
**M** 1.1-4.1  
**N** 1.4, 2.1-2.2  
**N** 2.4-2.5  
**S** 1.1

**P** 1.1-4.1  
**M** 1.1-4.1  
**N** 1.4, 2.1-2.2  
**N** 2.4-2.5  
**S** 1.1

**P** 1.1-3.1  
**M** 1.1-4.1  
**N** 1.4, 2.1-2.2  
**N** 2.4-2.5  
**S** 1.1

| ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □   | ✂    | Enorm<br>1-Z<br>PM-GLT-1 | Enorm<br>1-Z         | Enorm<br>1-Z<br>GLT-1 | Enorm<br>1-Z/E       |
|--------------------------|------------------|----------------|----------------|----------------|------------------|-----|------|--------------------------|----------------------|-----------------------|----------------------|
| Nr. 1 0.0730             | 64               | 45             | 4              | —              | 2,8              | 2,1 | 1,55 |                          |                      |                       |                      |
| Nr. 2 0.0860             | 56               | 45             | 4,5            | —              | 2,8              | 2,1 | 1,85 |                          |                      |                       |                      |
| Nr. 3 0.0990             | 48               | 50             | 5              | 14             | 2,8              | 2,1 | 2,1  |                          |                      |                       |                      |
| Nr. 4 0.1120             | 40               | 56             | 6              | 18             | 3,5              | 2,7 | 2,35 | <b>B616A601.5003</b>     | <b>B0503500.5003</b> | <b>B050C400.5003</b>  | <b>B0513500.5003</b> |
| Nr. 5 0.1250             | 40               | 56             | 7              | 18             | 3,5              | 2,7 | 2,65 |                          | B0503500.5004        |                       | B0513500.5004        |
| Nr. 6 0.1380             | 32               | 56             | 7              | 20             | 4                | 3   | 2,85 | <b>B616A601.5005</b>     | <b>B0503500.5005</b> | <b>B050C400.5005</b>  | <b>B0513500.5005</b> |
| Nr. 8 0.1640             | 32               | 63             | 8              | 21             | 4,5              | 3,4 | 3,5  | <b>B616A601.5006</b>     | <b>B0503500.5006</b> | <b>B050C400.5006</b>  | <b>B0513500.5006</b> |
| Nr. 10 0.1900            | 24               | 70             | 10             | 25             | 6                | 4,9 | 3,9  | <b>B616A601.5007</b>     | <b>B0503500.5007</b> | <b>B050C400.5007</b>  | <b>B0513500.5007</b> |
| Nr. 12 0.2160            | 24               | 80             | 10             | 30             | 6                | 4,9 | 4,5  |                          | B0503500.5008        |                       | B0513500.5008        |
| 1/4 0.2500               | 20               | 80             | 13             | 30             | 7                | 5,5 | 5,1  | <b>B616A601.5009</b>     | <b>B0503500.5009</b> | <b>B050C400.5009</b>  | <b>B0513500.5009</b> |
| 5/16 0.3125              | 18               | 90             | 14             | 35             | 8                | 6,2 | 6,6  | <b>B616A601.5010</b>     | <b>B0503500.5010</b> | <b>B050C400.5010</b>  | <b>B0513500.5010</b> |
| 3/8 0.3750               | 16               | 100            | 16             | 39             | 10               | 8   | 8    | <b>B616A601.5011</b>     | <b>B0503500.5011</b> | <b>B050C400.5011</b>  | <b>B0513500.5011</b> |
| ≈ DIN 376                |                  |                |                |                |                  |     |      | 210                      | 210                  | 210                   | 210                  |

| Z<br>CNC-controlled machines                                                                                  |                                                                                                   |                                                                                                 |                                                                                                   |                                                                                         |                                                                                                   |  |  |             |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--|--|-------------|
|                              | <b>new</b><br>   | <b>new</b><br> | <b>new</b><br>   |        | <b>new</b><br>   |  |  |             |
| 2B                                                                                                            | 2B                                                                                                | 3B                                                                                              | 3B                                                                                                | 2B +0,05 2)                                                                             | 2B +0,05 2)                                                                                       |  |  |             |
| TIN                                                                                                           | GLT-1                                                                                             |                                                                                                 | GLT-1                                                                                             |                                                                                         | GLT-1                                                                                             |  |  |             |
| HSSE                                                                                                          | HSSE                                                                                              | HSSE                                                                                            | HSSE                                                                                              | HSSE                                                                                    | HSSE                                                                                              |  |  |             |
| R45                                                                                                           | R45                                                                                               | R45                                                                                             | R45                                                                                               | R45                                                                                     | R45                                                                                               |  |  |             |
| E / 1,5-2                                                                                                     | E / 1,5-2                                                                                         | C / 2-3                                                                                         | C / 2-3                                                                                           | C / 2-3                                                                                 | C / 2-3                                                                                           |  |  |             |
| E / O / P                                                                                                     | E / O / P                                                                                         | E / O / P                                                                                       | E / O / P                                                                                         | E / O / P                                                                               | E / O / P                                                                                         |  |  |             |
| max. 3 x d <sub>1</sub><br> |                                                                                                   |                                                                                                 |                                                                                                   |                                                                                         |                                                                                                   |  |  |             |
| <b>P</b> 1.1-4.1<br><b>N</b> 2.2, 2.4-2.5<br><b>S</b> 1.1                                                     | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1 | <b>P</b> 1.1-3.1                                                                                | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1 | <b>P</b> 1.1-3.1                                                                        | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1 |  |  |             |
| Enorm 1-Z/E TIN                                                                                               | Enorm 1-Z/E GLT-1                                                                                 | Enorm 1-Z                                                                                       | Enorm 1-Z GLT-1                                                                                   | Enorm 1-Z                                                                               | Enorm 1-Z GLT-1                                                                                   |  |  |             |
|                                                                                                               |                                                                                                   |                                                                                                 |                                                                                                   |                                                                                         |                                                                                                   |  |  | Nr. 1 - 64  |
|                                                                                                               |                                                                                                   |                                                                                                 |                                                                                                   |                                                                                         |                                                                                                   |  |  | Nr. 2 - 56  |
|                                                                                                               |                                                                                                   |                                                                                                 |                                                                                                   |                                                                                         |                                                                                                   |  |  | Nr. 3 - 48  |
| <b>B0513700.5003</b>                                                                                          | <b>B051C400.5003</b>                                                                              | <b>B0503510.5003</b>                                                                            | <b>B050C410.5003</b>                                                                              | B0503530.5002                                                                           | B050C430.5003                                                                                     |  |  | Nr. 4 - 40  |
|                                                                                                               |                                                                                                   | B0503510.5004                                                                                   | B050C410.5004                                                                                     | B0503530.5004                                                                           | B050C430.5004                                                                                     |  |  | Nr. 5 - 40  |
| <b>B0513700.5005</b>                                                                                          | <b>B051C400.5005</b>                                                                              | <b>B0503510.5005</b>                                                                            | <b>B050C410.5005</b>                                                                              | B0503530.5005                                                                           | B050C430.5005                                                                                     |  |  | Nr. 6 - 32  |
| <b>B0513700.5006</b>                                                                                          | <b>B051C400.5006</b>                                                                              | <b>B0503510.5006</b>                                                                            | <b>B050C410.5006</b>                                                                              | B0503530.5006                                                                           | B050C430.5006                                                                                     |  |  | Nr. 8 - 32  |
| <b>B0513700.5007</b>                                                                                          | <b>B051C400.5007</b>                                                                              | <b>B0503510.5007</b>                                                                            | <b>B050C410.5007</b>                                                                              | B0503530.5007                                                                           | B050C430.5007                                                                                     |  |  | Nr. 10 - 24 |
|                                                                                                               |                                                                                                   | B0503510.5008                                                                                   | B050C410.5008                                                                                     | B0503530.5008                                                                           | B050C430.5008                                                                                     |  |  | Nr. 12 - 24 |
| <b>B0513700.5009</b>                                                                                          | <b>B051C400.5009</b>                                                                              | <b>B0503510.5009</b>                                                                            | <b>B050C410.5009</b>                                                                              | <b>B0503530.5009</b>                                                                    | <b>B050C430.5009</b>                                                                              |  |  | 1/4 - 20    |
| <b>B0513700.5010</b>                                                                                          | <b>B051C400.5010</b>                                                                              | <b>B0503510.5010</b>                                                                            | <b>B050C410.5010</b>                                                                              | <b>B0503530.5010</b>                                                                    | <b>B050C430.5010</b>                                                                              |  |  | 5/16 - 18   |
| <b>B0513700.5011</b>                                                                                          | <b>B051C400.5011</b>                                                                              | <b>B0503510.5011</b>                                                                            | <b>B050C410.5011</b>                                                                              | <b>B0503530.5011</b>                                                                    | <b>B050C430.5011</b>                                                                              |  |  | 3/8 - 16    |
|  211                       |  211           |  211         |  211           |  211 |  211           |  |  |             |

2) Vorbohrdurchmesser für Gewindebohrer mit Übermaß um 0,05 mm anheben  
Increase drill diameter for taps with oversize by 0.05 mm



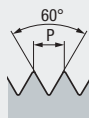
Werkzeug-Aufnahmen der Typenreihe  
Softsynchro® siehe Seite 617 - 644

Tool holders of our Softsynchro® series,  
see page 617 - 644

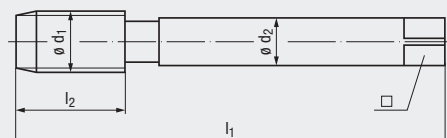
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| <b>UNC</b><br>UN-8     |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# UNC

ASME B1.1



≈ DIN  
376



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

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| Ø d <sub>1</sub><br>inch | inch   | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |       | Rekord<br>2B-STEEL-L | Rekord<br>2B-STEEL-L | Enorm<br>2-STEEL | Enorm<br>2-STEEL<br>TIN |
|--------------------------|--------|------------------|----------------|----------------|------------------|------|-------|----------------------|----------------------|------------------|-------------------------|
| 1/4                      | 0.2500 | 20               | 80             | 17             | 4,5              | 3,4  | 5,1   | C0208900.5009        |                      |                  |                         |
| 5/16                     | 0.3125 | 18               | 90             | 20             | 6                | 4,9  | 6,6   | C0208900.5010        |                      |                  |                         |
| 3/8                      | 0.3750 | 16               | 100            | 22             | 7                | 5,5  | 8     | C0208900.5011        | C0208910.5011        |                  |                         |
| 7/16                     | 0.4375 | 14               | 100            | 22             | 8                | 6,2  | 9,4   | C0208900.5012        | C0208910.5012        | C0501000.5012    | C0501400.5012           |
| 1/2                      | 0.5000 | 13               | 110            | 25             | 9                | 7    | 10,8  | C0208900.5013        | C0208910.5013        | C0501000.5013    | C0501400.5013           |
| 9/16                     | 0.5625 | 12               | 110            | 26             | 11               | 9    | 12,2  | C0208900.5014        | C0208910.5014        | C0501000.5014    | C0501400.5014           |
| 5/8                      | 0.6250 | 11               | 110            | 27             | 12               | 9    | 13,5  | C0208900.5015        | C0208910.5015        | C0501000.5015    | C0501400.5015           |
| 3/4                      | 0.7500 | 10               | 125            | 30             | 14               | 11   | 16,5  | C0208900.5016        | C0208910.5016        | C0501000.5016    | C0501400.5016           |
| 7/8                      | 0.8750 | 9                | 140            | 32             | 18               | 14,5 | 19,5  | C0208900.5017        |                      |                  |                         |
| 1"                       | 1.0000 | 8                | 160            | 36             | 18               | 14,5 | 22,25 | C0208900.5018        |                      | C0501000.5018    | C0501400.5018           |
| 1 1/8                    | 1.1250 | 7                | 180            | 40             | 22               | 18   | 25    | C0208900.5019        |                      |                  |                         |
| 1 1/4                    | 1.2500 | 7                | 180            | 40             | 22               | 18   | 28    | C0208900.5020        |                      | C0501000.5020    | C0501400.5020           |
| 1 3/8                    | 1.3750 | 6                | 200            | 50             | 28               | 22   | 30,75 | C0208900.5021        |                      | C0501000.5021    | C0501400.5021           |
| 1 1/2                    | 1.5000 | 6                | 200            | 50             | 28               | 22   | 34    | C0208900.5022        |                      | C0501000.5022    | C0501400.5022           |
| 1 3/4                    | 1.7500 | 5                | 220            | 58             | 36               | 29   | 39,5  | C0208900.5023        |                      | C0501000.5023    | C0501400.5023           |
| 2"                       | 2.0000 | 4 1/2            | 250            | 65             | 40               | 32   | 45    | C0208900.5024        |                      | C0501000.5024    | C0501400.5024           |
| ≈ DIN 371                |        |                  |                |                |                  |      |       | 204                  | 204                  | 204              | 204                     |

STEEL  
Steel  
materials



2B

HSSE

B / 4-5

E / O



new

3B

HSSE

B / 4-5

E / O



l<sub>2</sub> ≈ 10 x P

2B

HSSE

R35

C / 2-3

E / O



l<sub>2</sub> ≈ 10 x P

2B

TIN

HSSE

R35

C / 2-3

E / O

max. 3 x d<sub>1</sub>



max. 2,5 x d<sub>1</sub>



P 1.1-3.1  
N 2.2

P 1.1-3.1  
N 2.2

P 1.1-3.1  
N 2.2

P 1.1-3.1  
N 2.2

Gewinde-Tiefenlehrrdorne  
siehe Seite 588 - 591

Thread depth plug gauges,  
see page 588 - 591

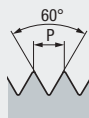
|                        |
|------------------------|
| Product Finder         |
| V <sub>C</sub>         |
| M                      |
| MF                     |
| <b>UNC</b><br>UN-8     |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



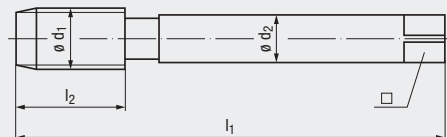
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| <b>UNC</b><br>UN-8     |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# UNC

ASME B1.1



≈ DIN 376



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

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**Z**  
CNC-controlled machines



new



new



|                |           |           |                  |
|----------------|-----------|-----------|------------------|
| 2BX            | 2B        | 2B        | 2B               |
| GLT-1          |           | GLT-1     |                  |
| <b>HSSE-PM</b> | HSSE      | HSSE      | HSSE             |
| R45            | R45       | R45       | R45              |
| C / 2-3        | C / 2-3   | C / 2-3   | <b>E / 1,5-2</b> |
| E / O / P      | E / O / P | E / O / P | E / O / P        |

max. 3 x d<sub>1</sub>



|                       |                  |                       |                  |
|-----------------------|------------------|-----------------------|------------------|
| <b>P</b> 1.1-4.1      | <b>P</b> 1.1-3.1 | <b>P</b> 1.1-4.1      | <b>P</b> 1.1-3.1 |
| <b>M</b> 1.1-4.1      |                  | <b>M</b> 1.1-4.1      |                  |
| <b>K</b> 1.1-3.2      |                  | <b>N</b> 1.4, 2.1-2.2 |                  |
| <b>N</b> 1.4, 2.1-2.2 |                  | <b>N</b> 2.4-2.5      |                  |
| <b>N</b> 2.4-2.5      |                  | <b>S</b> 1.1          |                  |
| <b>S</b> 1.1          |                  |                       |                  |

| ø d <sub>1</sub><br>inch | inch   | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |       | Enorm<br>2-Z<br>PM-GLT-1 | Enorm<br>2-Z  | Enorm<br>2-Z<br>GLT-1 | Enorm<br>2-Z/E |
|--------------------------|--------|------------------|----------------|----------------|------------------|------|-------|--------------------------|---------------|-----------------------|----------------|
| 1/4                      | 0.2500 | 20               | 80             | 13             | 4,5              | 3,4  | 5,1   |                          | C0503500.5009 |                       |                |
| 5/16                     | 0.3125 | 18               | 90             | 14             | 6                | 4,9  | 6,6   |                          | C0503500.5010 |                       |                |
| 3/8                      | 0.3750 | 16               | 100            | 16             | 7                | 5,5  | 8     |                          | C0503500.5011 |                       | C0513500.5011  |
| 7/16                     | 0.4375 | 14               | 100            | 18             | 8                | 6,2  | 9,4   | C616A601.5012            | C0503500.5012 | C050C400.5012         | C0513500.5012  |
| 1/2                      | 0.5000 | 13               | 110            | 20             | 9                | 7    | 10,8  | C616A601.5013            | C0503500.5013 | C050C400.5013         | C0513500.5013  |
| 9/16                     | 0.5625 | 12               | 110            | 20             | 11               | 9    | 12,2  |                          | C0503500.5014 | C050C400.5014         | C0513500.5014  |
| 5/8                      | 0.6250 | 11               | 110            | 22             | 12               | 9    | 13,5  | C616A601.5015            | C0503500.5015 | C050C400.5015         | C0513500.5015  |
| 3/4                      | 0.7500 | 10               | 125            | 25             | 14               | 11   | 16,5  | C616A601.5016            | C0503500.5016 | C050C400.5016         | C0513500.5016  |
| 7/8                      | 0.8750 | 9                | 140            | 27             | 18               | 14,5 | 19,5  |                          | C0503500.5017 | C050C400.5017         | C0513500.5017  |
| 1"                       | 1.0000 | 8                | 160            | 30             | 18               | 14,5 | 22,25 | C616A601.5018            | C0503500.5018 | C050C400.5018         | C0513500.5018  |
| 1 1/8                    | 1.1250 | 7                | 180            | 35             | 22               | 18   | 25    |                          | C0503500.5019 |                       |                |
| 1 1/4                    | 1.2500 | 7                | 180            | 35             | 22               | 18   | 28    |                          |               |                       |                |
| 1 3/8                    | 1.3750 | 6                | 200            | 40             | 28               | 22   | 30,75 |                          |               |                       |                |
| 1 1/2                    | 1.5000 | 6                | 200            | 40             | 28               | 22   | 34    |                          |               |                       |                |
| 1 3/4                    | 1.7500 | 5                | 220            | 45             | 36               | 29   | 39,5  |                          |               |                       |                |
| 2"                       | 2.0000 | 4 1/2            | 250            | 50             | 40               | 32   | 45    |                          |               |                       |                |
| ≈ DIN 371                |        |                  |                |                |                  |      |       | 206                      | 206           | 206                   | 206            |

| Z<br>CNC-controlled machines                                                            |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            |                                                                                   |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------|
|        | <b>new</b>                                                                              |        | <b>new</b>                                                                              |        | <b>new</b>                                                                              |  | <b>new</b> |  |
| 2B                                                                                      | 2B                                                                                      | 3B                                                                                      | 3B                                                                                      | 2B +0,05 2)                                                                             | 2B +0,05 2)                                                                             |                                                                                   |            |                                                                                   |
| TIN                                                                                     | GLT-1                                                                                   |                                                                                         | GLT-1                                                                                   |                                                                                         | GLT-1                                                                                   |                                                                                   |            |                                                                                   |
| HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                    | HSSE                                                                                    |                                                                                   |            |                                                                                   |
| R45                                                                                     | R45                                                                                     | R45                                                                                     | R45                                                                                     | R45                                                                                     | R45                                                                                     |                                                                                   |            |                                                                                   |
| E / 1,5-2                                                                               | E / 1,5-2                                                                               | C / 2-3                                                                                 | C / 2-3                                                                                 | C / 2-3                                                                                 | C / 2-3                                                                                 |                                                                                   |            |                                                                                   |
| E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                               | E / O / P                                                                               |                                                                                   |            |                                                                                   |
| max. 3 x d <sub>1</sub>                                                                 |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            |                                                                                   |
|       |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            |                                                                                   |
| <b>P</b> 1.1-4.1                                                                        | <b>P</b> 1.1-4.1                                                                        | <b>P</b> 1.1-3.1                                                                        | <b>P</b> 1.1-4.1                                                                        | <b>P</b> 1.1-3.1                                                                        | <b>P</b> 1.1-4.1                                                                        |                                                                                   |            |                                                                                   |
| <b>N</b> 2.2, 2.4-2.5                                                                   | <b>M</b> 1.1-4.1                                                                        |                                                                                         | <b>M</b> 1.1-4.1                                                                        |                                                                                         | <b>M</b> 1.1-4.1                                                                        |                                                                                   |            |                                                                                   |
| <b>S</b> 1.1                                                                            | <b>N</b> 1.4, 2.1-2.2                                                                   |                                                                                         | <b>N</b> 1.4, 2.1-2.2                                                                   |                                                                                         | <b>N</b> 1.4, 2.1-2.2                                                                   |                                                                                   |            |                                                                                   |
|                                                                                         | <b>N</b> 2.4-2.5                                                                        |                                                                                         | <b>N</b> 2.4-2.5                                                                        |                                                                                         | <b>N</b> 2.4-2.5                                                                        |                                                                                   |            |                                                                                   |
|                                                                                         | <b>S</b> 1.1                                                                            |                                                                                         | <b>S</b> 1.1                                                                            |                                                                                         | <b>S</b> 1.1                                                                            |                                                                                   |            |                                                                                   |
| Enorm 2-Z/E<br>TIN                                                                      | Enorm 2-Z/E<br>GLT-1                                                                    | Enorm 2-Z                                                                               | Enorm 2-Z<br>GLT-1                                                                      | Enorm 2-Z                                                                               | Enorm 2-Z<br>GLT-1                                                                      |                                                                                   |            |                                                                                   |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 1/4 - 20                                                                          |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 5/16 - 18                                                                         |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 3/8 - 16                                                                          |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 7/16 - 14                                                                         |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 1/2 - 13                                                                          |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 9/16 - 12                                                                         |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 5/8 - 11                                                                          |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 3/4 - 10                                                                          |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 7/8 - 9                                                                           |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 1" - 8                                                                            |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 1 1/8 - 7                                                                         |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 1 1/4 - 7                                                                         |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 1 3/8 - 6                                                                         |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 1 1/2 - 6                                                                         |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 1 3/4 - 5                                                                         |
|                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                         |                                                                                   |            | 2" - 4 1/2                                                                        |
|  207 |  207 |  207 |  207 |  207 |  207 |                                                                                   |            |                                                                                   |

2) Vorbohrdurchmesser für Gewindebohrer mit Übermaß um 0,05 mm anheben  
Increase drill diameter for taps with oversize by 0.05 mm

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

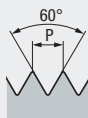
Accessories



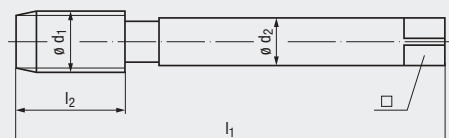
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# UN-8

ASME B1.1



≈ DIN  
374



**STEEL**  
Steel  
materials



new



**Z**  
CNC-controlled  
machines



new



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



2B  
TIN  
HSSE  
R35  
C / 2-3  
E / O

2B  
HSSE  
R45  
C / 2-3  
E / O / P

Gewindetiefe und Lochform  
Thread depth and hole type

max. 2,5 x d<sub>1</sub>



max. 3 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

» 78

P 1.1-3.1  
N 2.2

P 1.1-3.1

| Ø d <sub>1</sub><br>inch | inch   | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □  |      | Enorm<br>2-STEEL<br>TIN | Enorm<br>2-Z  |
|--------------------------|--------|------------------|----------------|----------------|------------------|----|------|-------------------------|---------------|
| 1 1/8                    | 1.1250 | 8                | 180            | 30             | 22               | 18 | 25,4 |                         |               |
| 1 1/4                    | 1.2500 | 8                | 180            | 30             | 22               | 18 | 28,6 | C0501400.5249           | C0503500.5247 |
| 1 3/8                    | 1.3750 | 8                | 200            | 30             | 28               | 22 | 31,8 | C0501400.5251           |               |
| 1 1/2                    | 1.5000 | 8                | 200            | 30             | 28               | 22 | 35   | C0501400.5253           |               |
| 1 5/8                    | 1.6250 | 8                | 200            | 30             | 32               | 24 | 38,1 | C0501400.5255           |               |
| 1 3/4                    | 1.7500 | 8                | 200            | 30             | 36               | 29 | 41,3 | C0501400.5257           |               |
| 1 7/8                    | 1.8750 | 8                | 225            | 33             | 36               | 29 | 44,5 | C0501400.5259           |               |
| 2"                       | 2.0000 | 8                | 225            | 33             | 40               | 32 | 47,7 | C0501400.5261           |               |



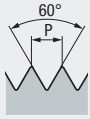
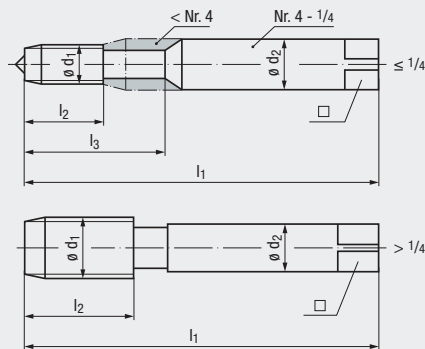
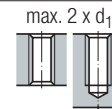
Schnellwechsel-Aufnahmen Typ KSN  
siehe Seite 652 - 661

Quick-change tap holders type KSN,  
see page 652 - 661



**UNC**

ASME B1.1

≈ DIN  
352Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

» 78

P 1.1-3.1

P 1.1-3.1

P 1.1-3.1

P 1.1-3.1

| ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □   |  | HGB-Set<br>V-Nr.1 | HGB-Set<br>M-Nr.2 | HGB-Set<br>F  | HGB-Set-3S<br>(Nr.1, Nr.2, F) |               |
|--------------------------|------------------|----------------|----------------|----------------|------------------|-----|-------------------------------------------------------------------------------------|-------------------|-------------------|---------------|-------------------------------|---------------|
| Nr. 1                    | 0.0730           | 64             | 36             | 8              | —                | 2,8 | 2,1                                                                                 | 1,55              | H0111019.5000     | H0111029.5000 | H0111001.5000                 | H0101001.5000 |
| Nr. 2                    | 0.0860           | 56             | 36             | 9              | —                | 2,8 | 2,1                                                                                 | 1,85              | H0111019.5001     | H0111029.5001 | H0111001.5001                 | H0101001.5001 |
| Nr. 3                    | 0.0990           | 48             | 40             | 9              | —                | 2,8 | 2,1                                                                                 | 2,1               | H0111019.5002     | H0111029.5002 | H0111001.5002                 | H0101001.5002 |
| Nr. 4                    | 0.1120           | 40             | 40             | 10             | 18               | 3,5 | 2,7                                                                                 | 2,35              | H0111019.5003     | H0111029.5003 | H0111001.5003                 | H0101001.5003 |
| Nr. 5                    | 0.1250           | 40             | 40             | 10             | 18               | 3,5 | 2,7                                                                                 | 2,65              |                   |               |                               |               |
| Nr. 6                    | 0.1380           | 32             | 45             | 11             | 20               | 4   | 3                                                                                   | 2,85              | H0111019.5005     | H0111029.5005 | H0111001.5005                 | H0101001.5005 |
| Nr. 8                    | 0.1640           | 32             | 45             | 12             | 22               | 4,5 | 3,4                                                                                 | 3,5               | H0111019.5006     | H0111029.5006 | H0111001.5006                 | H0101001.5006 |
| Nr. 10                   | 0.1900           | 24             | 50             | 14             | 25               | 6   | 4,9                                                                                 | 3,9               | H0111019.5007     | H0111029.5007 | H0111001.5007                 | H0101001.5007 |
| Nr. 12                   | 0.2160           | 24             | 56             | 16             | 28               | 6   | 4,9                                                                                 | 4,5               |                   |               |                               |               |
| 1/4                      | 0.2500           | 20             | 56             | 16             | 28               | 6   | 4,9                                                                                 | 5,1               | H0111019.5009     | H0111029.5009 | H0111001.5009                 | H0101001.5009 |
| 5/16                     | 0.3125           | 18             | 63             | 20             | —                | 6   | 4,9                                                                                 | 6,6               | H0111019.5010     | H0111029.5010 | H0111001.5010                 | H0101001.5010 |
| 3/8                      | 0.3750           | 16             | 70             | 22             | —                | 7   | 5,5                                                                                 | 8                 | H0111019.5011     | H0111029.5011 | H0111001.5011                 | H0101001.5011 |
| 7/16                     | 0.4375           | 14             | 70             | 22             | —                | 8   | 6,2                                                                                 | 9,4               | H0111019.5012     | H0111029.5012 | H0111001.5012                 | H0101001.5012 |
| 1/2                      | 0.5000           | 13             | 75             | 25             | —                | 9   | 7                                                                                   | 10,8              | H0111019.5013     | H0111029.5013 | H0111001.5013                 | H0101001.5013 |
| 9/16                     | 0.5625           | 12             | 80             | 26             | —                | 11  | 9                                                                                   | 12,2              |                   |               |                               |               |
| 5/8                      | 0.6250           | 11             | 80             | 27             | —                | 12  | 9                                                                                   | 13,5              | H0111019.5015     | H0111029.5015 | H0111001.5015                 | H0101001.5015 |
| 3/4                      | 0.7500           | 10             | 95             | 32             | —                | 14  | 11                                                                                  | 16,5              | H0111019.5016     | H0111029.5016 | H0111001.5016                 | H0101001.5016 |
| 7/8                      | 0.8750           | 9              | 100            | 32             | —                | 18  | 14,5                                                                                | 19,5              |                   |               |                               |               |
| 1"                       | 1.0000           | 8              | 110            | 36             | —                | 18  | 14,5                                                                                | 22,25             | H0111019.5018     | H0111029.5018 | H0111001.5018                 | H0101001.5018 |
| 1 1/8                    | 1.1250           | 7              | 125            | 40             | —                | 22  | 18                                                                                  | 25                |                   |               |                               |               |
| 1 1/4                    | 1.2500           | 7              | 125            | 40             | —                | 22  | 18                                                                                  | 28                | H0111019.5020     | H0111029.5020 | H0111001.5020                 | H0101001.5020 |
| 1 3/8                    | 1.3750           | 6              | 150            | 50             | —                | 28  | 22                                                                                  | 30,75             |                   |               |                               |               |
| 1 1/2                    | 1.5000           | 6              | 150            | 50             | —                | 28  | 22                                                                                  | 34                | H0111019.5022     | H0111029.5022 | H0111001.5022                 | H0101001.5022 |
| 1 3/4                    | 1.7500           | 5              | 160            | 58             | —                | 36  | 29                                                                                  | 39,5              | H0111019.5023     | H0111029.5023 | H0111001.5023                 | H0101001.5023 |
| 2"                       | 2.0000           | 4 1/2          | 180            | 65             | —                | 40  | 32                                                                                  | 45                | H0111019.5024     | H0111029.5024 | H0111001.5024                 | H0101001.5024 |

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

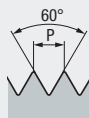
SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

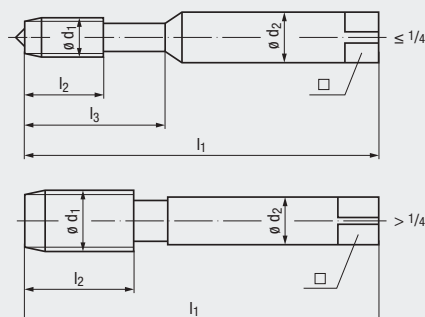
|                |
|----------------|
| Product Finder |
| V <sub>c</sub> |
| M              |
| MF             |
| UNC            |
| UN-8           |
| UNF            |
| UNEF           |
| G, Rp          |
| NPSM, NPSF     |
| NPT, NPTF      |
| Rc, W          |
| BSW, BSF       |
| Pg             |
| MJ             |
| UNJC, UNJF     |
| EG (STI)       |
| SELF-LOCK      |
| Tr, Tr-F       |
| Rd             |
| Zubehör        |
| Accessories    |

# UNC

ASME B1.1



≈ DIN  
352



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



HSSE

HSSE

HSSE

2BX

HSSE

C / 2-3

C / 2-3

C / 2-3

C / 2-3

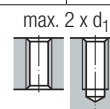
O / P

O / P

O / P

O / P

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material



78

**P** 1.1-5.1  
**M** 1.1-4.1  
**K** 1.1-4.2  
**N** 1.1-2.6  
**S** 2.1-2.2, 2.4

**P** 1.1-5.1  
**M** 1.1-4.1  
**K** 1.1-4.2  
**N** 1.1-2.6  
**S** 2.1-2.2, 2.4

**P** 1.1-5.1  
**M** 1.1-4.1  
**K** 1.1-4.2  
**N** 1.1-2.6  
**S** 2.1-2.2, 2.4

**P** 1.1-5.1  
**M** 1.1-4.1  
**K** 1.1-4.2  
**N** 1.1-2.6  
**S** 2.1-2.2, 2.4

| Ø d <sub>1</sub><br>inch | inch   | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □    |       | WM-Set<br>V-Nr.1Z | WM-Set<br>V-Nr.1 | WM-Set<br>M-Nr.2 | WM-Set<br>F   |
|--------------------------|--------|------------------|----------------|----------------|----------------|------------------|------|-------|-------------------|------------------|------------------|---------------|
| 1/4                      | 0.2500 | 20               | 56             | 16             | 28             | 6                | 4,9  | 5,1   | H0413019.5009     | H0423019.5009    | H0423029.5009    | H0423001.5009 |
| 5/16                     | 0.3125 | 18               | 63             | 20             | —              | 6                | 4,9  | 6,6   | H0413019.5010     | H0423019.5010    | H0423029.5010    | H0423001.5010 |
| 3/8                      | 0.3750 | 16               | 70             | 22             | —              | 7                | 5,5  | 8     | H0413019.5011     | H0423019.5011    | H0423029.5011    | H0423001.5011 |
| 7/16                     | 0.4375 | 14               | 70             | 22             | —              | 8                | 6,2  | 9,4   | H0413019.5012     | H0423019.5012    | H0423029.5012    | H0423001.5012 |
| 1/2                      | 0.5000 | 13               | 75             | 25             | —              | 9                | 7    | 10,8  | H0413019.5013     | H0423019.5013    | H0423029.5013    | H0423001.5013 |
| 9/16                     | 0.5625 | 12               | 80             | 26             | —              | 11               | 9    | 12,2  |                   |                  |                  |               |
| 5/8                      | 0.6250 | 11               | 80             | 27             | —              | 12               | 9    | 13,5  | H0413019.5015     | H0423019.5015    | H0423029.5015    | H0423001.5015 |
| 3/4                      | 0.7500 | 10               | 95             | 32             | —              | 14               | 11   | 16,5  | H0413019.5016     | H0423019.5016    | H0423029.5016    | H0423001.5016 |
| 7/8                      | 0.8750 | 9                | 100            | 32             | —              | 18               | 14,5 | 19,5  |                   |                  |                  |               |
| 1"                       | 1.0000 | 8                | 110            | 36             | —              | 18               | 14,5 | 22,25 | H0413019.5018     | H0423019.5018    | H0423029.5018    | H0423001.5018 |

- 1) Der Vorschneider Nr.1Z mit Führungszapfen ist eine zusätzliche Hilfe zum winkelrechten Anschneiden von Hand. Er kann z.B. auf der Maschine weggelassen werden. Die Profilabstufung von Nr.1Z und Nr.1 ist gleich.  
The taper tap No. 1Z with cylindrical pilot is an additional aid for true alignment especially when tapping by hand. It can be deleted when tapping by machine. The profile graduation of No.1Z, and No.1 is the same.



2)



2)



2BX

2BX

2BX

2BX

HSSE

HSSE

HSSE

HSSE

C / 2-3

C / 2-3

C / 2-3

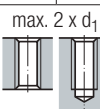
C / 2-3

O / P

O / P

O / P

O / P

**P** 1.1-5.1**M** 1.1-4.1**K** 1.1-4.2**N** 1.1-2.6**S** 2.1-2.2, 2.4**P** 1.1-5.1**M** 1.1-4.1**K** 1.1-4.2**N** 1.1-2.6**S** 2.1-2.2, 2.4**P** 1.1-5.1**M** 1.1-4.1**K** 1.1-4.2**N** 1.1-2.6**S** 2.1-2.2, 2.4**P** 1.1-5.1**M** 1.1-4.1**K** 1.1-4.2**N** 1.1-2.6**S** 2.1-2.2, 2.4**WM-Set-3S**  
(Nr.1Z, Nr.1, F)**WM-Set-2S**  
(Nr.1, F)**WM-Set-4S**  
(Nr.1Z, Nr.1, Nr.2, F)**WM-Set-3S**  
(Nr.1, Nr.2, F)**H0453001.5009****H0453001.5010****H0453001.5011**

H0453001.5012

**H0453001.5013**

H0453001.5015

H0453001.5016

H0453001.5018

**H0483001.5009****H0483001.5010****H0483001.5011**

H0483001.5012

**H0483001.5013**

H0483001.5015

H0483001.5016

H0483001.5018

**H0403001.5009****H0403001.5010****H0403001.5011**

H0403001.5012

**H0403001.5013**

H0403001.5015

H0403001.5016

H0403001.5018

**H0433001.5009****H0433001.5010****H0433001.5011**

H0433001.5012

**H0433001.5013**

H0433001.5015

H0433001.5016

H0433001.5018

1/4 - 20

5/16 - 18

3/8 - 16

7/16 - 14

1/2 - 13

9/16 - 12

5/8 - 11

3/4 - 10

7/8 - 9

1" - 8

2) Beim Gewindebohren von Hand in Durchgangslöcher entfällt Nr.1  
No.1 is not needed when tapping in through holes by hand

Product  
FinderV<sub>c</sub>

M

MF

**UNC**

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

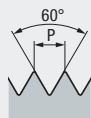
Accessories



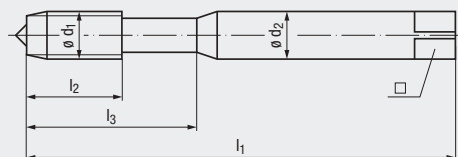
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# UNF

ASME B1.1



≈ DIN 371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



STEEL  
Steel  
materials



2B

HSSE

B / 4-5

E / O



3B

HSSE

B / 4-5

E / O



l<sub>2</sub> ≈ 10 x P

2B

HSSE

R35

C / 2-3

E / O



l<sub>2</sub> ≈ 10 x P

2B

TIN

HSSE

R35

C / 2-3

E / O

Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

max. 3 x d<sub>1</sub>



max. 2,5 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

» 78

P 1.1-3.1  
N 2.2

P 1.1-3.1  
N 2.2

P 1.1-3.1  
N 2.2

P 1.1-3.1  
N 2.2

| ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □   |     | Rekord<br>1B-STEEL-L | Rekord<br>1B-STEEL-L | Enorm 1<br>STEEL | Enorm 1<br>STEEL<br>TIN |
|--------------------------|------------------|----------------|----------------|----------------|------------------|-----|-----|----------------------|----------------------|------------------|-------------------------|
| Nr. 2                    | 0.0860           | 64             | 45             | 7              | 12               | 2,8 | 2,1 | 1,85                 | B0208900.5035        |                  |                         |
| Nr. 3                    | 0.0990           | 56             | 50             | 9              | 14               | 2,8 | 2,1 | 2,15                 | B0208900.5036        |                  |                         |
| Nr. 4                    | 0.1120           | 48             | 56             | 11             | 18               | 3,5 | 2,7 | 2,4                  | B0208900.5037        |                  |                         |
| Nr. 5                    | 0.1250           | 44             | 56             | 11             | 18               | 3,5 | 2,7 | 2,7                  | B0208900.5038        |                  |                         |
| Nr. 6                    | 0.1380           | 40             | 56             | 12             | 20               | 4   | 3   | 2,95                 | B0208900.5039        | B0208910.5039    |                         |
| Nr. 8                    | 0.1640           | 36             | 63             | 13             | 21               | 4,5 | 3,4 | 3,5                  | B0208900.5040        | B0208910.5040    |                         |
| Nr. 10                   | 0.1900           | 32             | 70             | 15             | 25               | 6   | 4,9 | 4,1                  | B0208900.5041        | B0208910.5041    | B0501000.5041           |
| Nr. 12                   | 0.2160           | 28             | 80             | 16             | 30               | 6   | 4,9 | 4,6                  |                      |                  |                         |
| 1/4                      | 0.2500           | 28             | 80             | 17             | 30               | 7   | 5,5 | 5,5                  | B0208900.5043        | B0208910.5043    | B0501000.5043           |
| 5/16                     | 0.3125           | 24             | 90             | 17             | 35               | 8   | 6,2 | 6,9                  | B0208900.5044        | B0208910.5044    | B0501000.5044           |
| 3/8                      | 0.3750           | 24             | 90             | 18             | 35               | 10  | 8   | 8,5                  | B0208900.5045        | B0208910.5045    | B0501000.5045           |

≈ DIN 374



220

220

220

220

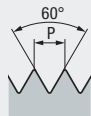
| VA<br>Stainless steel<br>materials                                                 |                                                                                   |                                                                                   |                                                                                    | INOX<br>Stainless steel<br>materials                                               |  | H<br>Materials of high<br>tensile strength                                           | Product<br>Finder      |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------|------------------------|
|   |  |  |   |   |  |   |                        |
|   |  |  |   |   |  |   | V <sub>c</sub>         |
| 2B                                                                                 | 2B                                                                                | 2B                                                                                | 2B                                                                                 |                                                                                    |  | 2BX                                                                                  | M                      |
| NT                                                                                 | TIN                                                                               | GLT-1                                                                             |                                                                                    |                                                                                    |  | NT                                                                                   | MF                     |
| HSSE                                                                               | HSSE                                                                              | HSSE                                                                              | HSSE                                                                               |                                                                                    |  | HSSE                                                                                 | UNC<br>UN-8            |
|                                                                                    |                                                                                   |                                                                                   |                                                                                    |                                                                                    |  |                                                                                      | UNF<br>UNEF            |
| B / 4-5                                                                            | B / 4-5                                                                           | B / 4-5                                                                           |                                                                                    |                                                                                    |  |                                                                                      | G, Rp<br>NPSM, NPSF    |
| E / O / P                                                                          | E / O / P                                                                         | E / O / P                                                                         |                                                                                    |                                                                                    |  |                                                                                      | NPT, NPTF<br>Rc, W     |
| max. 3 x d <sub>1</sub>                                                            |                                                                                   |                                                                                   | max. 2,5 x d <sub>1</sub>                                                          | max. 2,5 x d <sub>1</sub>                                                          |  | max. 2 x d <sub>1</sub>                                                              | BSW, BSF               |
|  |                                                                                   |                                                                                   |  |  |  |  | Pg                     |
| <b>P</b> 2.1-3.1                                                                   | <b>P</b> 1.1-4.1                                                                  | <b>P</b> 1.1-4.1                                                                  | <b>P</b> 1.1-3.1                                                                   | <b>M</b> 1.1-2.1                                                                   |  | <b>K</b> 1.1-4.2                                                                     | MJ<br>UNJC, UNJF       |
| <b>N</b> 2.2, 2.5                                                                  |                                                                                   | <b>M</b> 1.1-4.1<br><b>N</b> 2.2                                                  |                                                                                    |                                                                                    |  | <b>N</b> 4.1                                                                         | EG (STI)               |
| Rekord<br>1B-VA<br>NT                                                              | Rekord<br>1B-VA<br>TIN                                                            | Rekord<br>1B-VA<br>GLT-1                                                          | Enorm 1<br>VA                                                                      | Enorm 1<br>INOX<br>GLT-201                                                         |  | Rekord<br>1A-H<br>NT                                                                 | SELF-LOCK              |
|                                                                                    |                                                                                   |                                                                                   |                                                                                    |                                                                                    |  |                                                                                      | Tr, Tr-F<br>Rd         |
| B0203000.5037                                                                      | B0203100.5037                                                                     | B020C300.5037                                                                     |                                                                                    |                                                                                    |  | B0100501.5037                                                                        | Zubehör<br>Accessories |
| B0203000.5039                                                                      | B0203100.5039                                                                     | B020C300.5039                                                                     |                                                                                    |                                                                                    |  | B0100501.5038                                                                        |                        |
| B0203000.5040                                                                      | B0203100.5040                                                                     | B020C300.5040                                                                     |                                                                                    |                                                                                    |  | B0100501.5039                                                                        |                        |
| B0203000.5041                                                                      | B0203100.5041                                                                     | B020C300.5041                                                                     | B0503000.5041                                                                      | B050J300.5041                                                                      |  | B0100501.5040                                                                        |                        |
| B0203000.5043                                                                      | B0203100.5043                                                                     | B020C300.5043                                                                     | B0503000.5043                                                                      | B050J300.5043                                                                      |  | B0100501.5041                                                                        |                        |
| B0203000.5044                                                                      | B0203100.5044                                                                     | B020C300.5044                                                                     | B0503000.5044                                                                      | B050J300.5044                                                                      |  | B0100501.5042                                                                        |                        |
| B0203000.5045                                                                      | B0203100.5045                                                                     | B020C300.5045                                                                     | B0503000.5045                                                                      | B050J300.5045                                                                      |  | B0100501.5043                                                                        |                        |
| 221                                                                                | 221                                                                               | 221                                                                               | 221                                                                                | 221                                                                                |  | 221                                                                                  |                        |

|             |
|-------------|
| Nr. 2 - 64  |
| Nr. 3 - 56  |
| Nr. 4 - 48  |
| Nr. 5 - 44  |
| Nr. 6 - 40  |
| Nr. 8 - 36  |
| Nr. 10 - 32 |
| Nr. 12 - 28 |
| 1/4 - 28    |
| 5/16 - 24   |
| 3/8 - 24    |

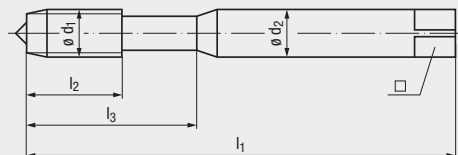


# UNF

ASME B1.1



≈ DIN  
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Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



max. 3 x d<sub>1</sub>



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

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|                       |                  |                       |                  |
|-----------------------|------------------|-----------------------|------------------|
| <b>P</b> 1.1-4.1      | <b>P</b> 1.1-3.1 | <b>P</b> 1.1-4.1      | <b>P</b> 1.1-3.1 |
| <b>M</b> 1.1-4.1      |                  | <b>M</b> 1.1-4.1      |                  |
| <b>K</b> 1.1-3.2      |                  | <b>N</b> 1.4, 2.1-2.2 |                  |
| <b>N</b> 1.4, 2.1-2.2 |                  | <b>N</b> 2.4-2.5      |                  |
| <b>N</b> 2.4-2.5      |                  | <b>S</b> 1.1          |                  |
| <b>S</b> 1.1          |                  |                       |                  |

| ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □   |     |      | Enorm<br>1-Z<br>PM-GLT-1 | Enorm<br>1-Z         | Enorm<br>1-Z<br>GLT-1 | Enorm<br>1-Z/E       |
|--------------------------|------------------|----------------|----------------|----------------|------------------|-----|-----|------|--------------------------|----------------------|-----------------------|----------------------|
| Nr. 2                    | 0.0860           | 64             | 45             | 4,5            | 12               | 2,8 | 2,1 | 1,85 |                          | B0503500.5035        |                       | B0513500.5035        |
| Nr. 3                    | 0.0990           | 56             | 50             | 5              | 14               | 2,8 | 2,1 | 2,15 |                          | B0503500.5036        |                       | B0513500.5036        |
| Nr. 4                    | 0.1120           | 48             | 56             | 6              | 18               | 3,5 | 2,7 | 2,4  |                          | <b>B0503500.5037</b> |                       | B0513500.5037        |
| Nr. 5                    | 0.1250           | 44             | 56             | 7              | 18               | 3,5 | 2,7 | 2,7  |                          | B0503500.5038        |                       | B0513500.5038        |
| Nr. 6                    | 0.1380           | 40             | 56             | 7              | 20               | 4   | 3   | 2,95 |                          | <b>B0503500.5039</b> | <b>B050C400.5039</b>  | <b>B0513500.5039</b> |
| Nr. 8                    | 0.1640           | 36             | 63             | 8              | 21               | 4,5 | 3,4 | 3,5  |                          | <b>B0503500.5040</b> | <b>B050C400.5040</b>  | <b>B0513500.5040</b> |
| Nr. 10                   | 0.1900           | 32             | 70             | 10             | 25               | 6   | 4,9 | 4,1  | <b>B616A601.5041</b>     | <b>B0503500.5041</b> | <b>B050C400.5041</b>  | <b>B0513500.5041</b> |
| Nr. 12                   | 0.2160           | 28             | 80             | 10             | 30               | 6   | 4,9 | 4,6  |                          | B0503500.5042        |                       | B0513500.5042        |
| 1/4                      | 0.2500           | 28             | 80             | 10             | 30               | 7   | 5,5 | 5,5  | <b>B616A601.5043</b>     | <b>B0503500.5043</b> | <b>B050C400.5043</b>  | <b>B0513500.5043</b> |
| 5/16                     | 0.3125           | 24             | 90             | 10             | 35               | 8   | 6,2 | 6,9  | <b>B616A601.5044</b>     | <b>B0503500.5044</b> | <b>B050C400.5044</b>  | <b>B0513500.5044</b> |
| 3/8                      | 0.3750           | 24             | 90             | 10             | 35               | 10  | 8   | 8,5  | <b>B616A601.5045</b>     | <b>B0503500.5045</b> | <b>B050C400.5045</b>  | <b>B0513500.5045</b> |

≈ DIN 374



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Werkzeug-Aufnahmen der Typenreihe  
Softsynchro® siehe Seite 617 - 644

Tool holders of our Softsynchro® series,  
see page 617 - 644

| Z<br>CNC-controlled machines                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |                                                        |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|--------------------------------------------------------|
|   |  |  |  |  |  |  |  |                                                        |
| 2B                                                                                 | 2B                                                                                | 3B                                                                                | 3B                                                                                | 2B +0,05 2)                                                                       | 2B +0,05 2)                                                                       |  |  |                                                        |
| TIN                                                                                | GLT-1                                                                             |                                                                                   | GLT-1                                                                             |                                                                                   | GLT-1                                                                             |  |  |                                                        |
| HSSE                                                                               | HSSE                                                                              | HSSE                                                                              | HSSE                                                                              | HSSE                                                                              | HSSE                                                                              |  |  |                                                        |
| R45                                                                                | R45                                                                               | R45                                                                               | R45                                                                               | R45                                                                               | R45                                                                               |  |  |                                                        |
| E / 1,5-2                                                                          | E / 1,5-2                                                                         | C / 2-3                                                                           | C / 2-3                                                                           | E / 1,5-2                                                                         | E / 1,5-2                                                                         |  |  |                                                        |
| E / O / P                                                                          | E / O / P                                                                         | E / O / P                                                                         | E / O / P                                                                         | E / O / P                                                                         | E / O / P                                                                         |  |  |                                                        |
| max. 3 x d <sub>1</sub>                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |                                                        |
|  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |                                                        |
| P 1.1-4.1<br>N 2.2, 2.4-2.5<br>S 1.1                                               | P 1.1-4.1<br>M 1.1-4.1<br>N 1.4, 2.1-2.2<br>N 2.4-2.5<br>S 1.1                    | P 1.1-3.1                                                                         | P 1.1-4.1<br>M 1.1-4.1<br>N 1.4, 2.1-2.2<br>N 2.4-2.5<br>S 1.1                    | P 1.1-3.1                                                                         | P 1.1-4.1<br>M 1.1-4.1<br>N 1.4, 2.1-2.2<br>N 2.4-2.5<br>S 1.1                    |  |  |                                                        |
| Enorm 1-Z/E<br>TIN                                                                 | Enorm 1-Z/E<br>GLT-1                                                              | Enorm 1-Z                                                                         | Enorm 1-Z<br>GLT-1                                                                | Enorm 1-Z/E                                                                       | Enorm 1-Z/E<br>GLT-1                                                              |  |  |                                                        |
| B0513700.5037                                                                      | B051C400.5037                                                                     |                                                                                   |                                                                                   | B0513530.5035<br>B0513530.5036<br>B0513530.5037<br>B0513530.5038                  | B051C430.5037                                                                     |  |  | Nr. 2 - 64<br>Nr. 3 - 56<br>Nr. 4 - 48<br>Nr. 5 - 44   |
| B0513700.5039<br>B0513700.5040<br>B0513700.5041                                    | B051C400.5039<br>B051C400.5040<br>B051C400.5041                                   | B0503510.5039<br>B0503510.5040<br>B0503510.5041<br>B0503510.5042                  | B050C410.5039<br>B050C410.5040<br>B050C410.5041<br>B050C410.5042                  | B0513530.5039<br>B0513530.5040<br>B0513530.5041<br>B0513530.5042                  | B051C430.5039<br>B051C430.5040<br>B051C430.5041                                   |  |  | Nr. 6 - 40<br>Nr. 8 - 36<br>Nr. 10 - 32<br>Nr. 12 - 28 |
| B0513700.5043<br>B0513700.5044<br>B0513700.5045                                    | B051C400.5043<br>B051C400.5044<br>B051C400.5045                                   | B0503510.5043<br>B0503510.5044<br>B0503510.5045                                   | B050C410.5043<br>B050C410.5044<br>B050C410.5045                                   | B0513530.5043<br>B0513530.5044<br>B0513530.5045                                   | B051C430.5043<br>B051C430.5044<br>B051C430.5045                                   |  |  | 1/4 - 28<br>5/16 - 24<br>3/8 - 24                      |
| 222                                                                                | 223                                                                               | 223                                                                               | 223                                                                               | 223                                                                               | 223                                                                               |  |  |                                                        |

2) Vorbohrdurchmesser für Gewindebohrer mit Übermaß um 0,05 mm anheben  
Increase drill diameter for taps with oversize by 0.05 mm

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

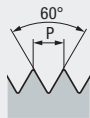
Tr, Tr-F  
RdZubehör  
Accessories



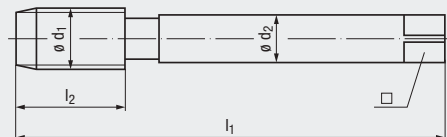
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# UNF

ASME B1.1



≈ DIN  
374



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



**STEEL**  
Steel  
materials



new



2B

HSSE

B / 4-5

E / O

3B

HSSE

B / 4-5

E / O

2B

HSSE

R35

C / 2-3

E / O

2B

TIN

HSSE

R35

C / 2-3

E / O

Gewindetiefe und Lochform  
Thread depth and hole type

max. 3 x d<sub>1</sub>



max. 2,5 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

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P 1.1-3.1  
N 2.2

P 1.1-3.1  
N 2.2

P 1.1-3.1  
N 2.2

P 1.1-3.1  
N 2.2

| ø d <sub>1</sub><br>inch | inch   | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |       | Rekord<br>2B-STEEL-L | Rekord<br>2B-STEEL-L | Enorm<br>2-STEEL | Enorm<br>2-STEEL<br>TIN |
|--------------------------|--------|------------------|----------------|----------------|------------------|------|-------|----------------------|----------------------|------------------|-------------------------|
| 1/4                      | 0.2500 | 28               | 80             | 17             | 4,5              | 3,4  | 5,5   | C0208900.5043        |                      |                  |                         |
| 5/16                     | 0.3125 | 24               | 90             | 17             | 6                | 4,9  | 6,9   | C0208900.5044        |                      |                  |                         |
| 3/8                      | 0.3750 | 24               | 90             | 18             | 7                | 5,5  | 8,5   | C0208900.5045        | C0208910.5045        |                  |                         |
| 7/16                     | 0.4375 | 20               | 100            | 22             | 8                | 6,2  | 9,9   | C0208900.5046        | C0208910.5046        | C0501000.5046    | C0501400.5046           |
| 1/2                      | 0.5000 | 20               | 100            | 22             | 9                | 7    | 11,5  | C0208900.5047        | C0208910.5047        | C0501000.5047    | C0501400.5047           |
| 9/16                     | 0.5625 | 18               | 100            | 22             | 11               | 9    | 12,9  | C0208900.5048        | C0208910.5048        | C0501000.5048    | C0501400.5048           |
| 5/8                      | 0.6250 | 18               | 100            | 22             | 12               | 9    | 14,5  | C0208900.5049        | C0208910.5049        | C0501000.5049    | C0501400.5049           |
| 3/4                      | 0.7500 | 16               | 110            | 25             | 14               | 11   | 17,5  | C0208900.5050        | C0208910.5050        | C0501000.5050    | C0501400.5050           |
| 7/8                      | 0.8750 | 14               | 125            | 25             | 18               | 14,5 | 20,4  | C0208900.5051        |                      |                  |                         |
| 1"                       | 1.0000 | 12               | 140            | 28             | 18               | 14,5 | 23,25 | C0208900.5052        |                      |                  |                         |
| 1 1/8                    | 1.1250 | 12               | 150            | 28             | 22               | 18   | 26,5  | C0208900.5053        |                      |                  |                         |
| 1 1/4                    | 1.2500 | 12               | 150            | 28             | 22               | 18   | 29,5  | C0208900.5054        |                      | C0501000.5054    | C0501400.5054           |
| 1 3/8                    | 1.3750 | 12               | 170            | 30             | 28               | 22   | 32,75 | C0208900.5055        |                      | C0501000.5055    | C0501400.5055           |
| 1 1/2                    | 1.5000 | 12               | 170            | 30             | 28               | 22   | 36    | C0208900.5056        |                      | C0501000.5056    | C0501400.5056           |
| ≈ DIN 371                |        |                  |                |                |                  |      |       | 216                  | 216                  | 216              | 216                     |

| VA<br>Stainless steel<br>materials                                                                                                           |                                                                                                    |                                                                                                    |                                                                                                                      | INOX<br>Stainless steel<br>materials                                                                                 | H<br>Materials of high<br>tensile strength                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                             |                   |                   |                                     |                                     |                                                                                   |
|                                                             |                   |                   |                                     |                                     |                                                                                   |
| 2B<br>NT<br>HSSE                                                                                                                             | 2B<br>TIN<br>HSSE                                                                                  | 2B<br>GLT-1<br>HSSE                                                                                | 2B<br>HSSE<br>R35<br>C / 2-3<br>E / O / P                                                                            | 2B<br>GLT-201<br>HSSE<br>R45<br>C / 2-3<br>E / O                                                                     | 2BX<br>NT<br>HSSE<br>C / 2-3<br>E / O / P                                                                                                                            |
| B / 4-5<br>E / O / P                                                                                                                         | B / 4-5<br>E / O / P                                                                               | B / 4-5<br>E / O / P                                                                               | B / 4-5<br>E / O / P                                                                                                 | B / 4-5<br>E / O / P                                                                                                 | B / 4-5<br>E / O / P                                                                                                                                                 |
| max. 3 x d <sub>1</sub><br>                                |                                                                                                    |                                                                                                    |                                                                                                                      | max. 2,5 x d <sub>1</sub><br>      | max. 2 x d <sub>1</sub><br>                                                      |
| <b>P</b> 2.1-3.1<br><b>N</b> 2.2, 2.5                                                                                                        | <b>P</b> 1.1-4.1                                                                                   | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 2.2                                               | <b>P</b> 1.1-3.1                                                                                                     | <b>M</b> 1.1-2.1                                                                                                     | <b>K</b> 1.1-4.2<br><b>N</b> 4.1                                                                                                                                     |
| <b>Rekord</b><br>2B-VA<br>NT                                                                                                                 | <b>Rekord</b><br>2B-VA<br>TIN                                                                      | <b>Rekord</b><br>2B-VA<br>GLT-1                                                                    | <b>Enorm 2</b><br>VA                                                                                                 | <b>Enorm 2</b><br>INOX<br>GLT-201                                                                                    | <b>Rekord</b><br>2A-H<br>NT                                                                                                                                          |
| <b>C0203000.5046</b><br><b>C0203000.5047</b><br><b>C0203000.5049</b><br><b>C0203000.5050</b><br><b>C0203000.5051</b><br><b>C0203000.5052</b> | C0203100.5046<br>C0203100.5047<br>C0203100.5049<br>C0203100.5050<br>C0203100.5051<br>C0203100.5052 | C020C300.5046<br>C020C300.5047<br>C020C300.5049<br>C020C300.5050<br>C020C300.5051<br>C020C300.5052 | <b>C0503000.5046</b><br><b>C0503000.5047</b><br><b>C0503000.5048</b><br><b>C0503000.5049</b><br><b>C0503000.5050</b> | <b>C050J300.5046</b><br><b>C050J300.5047</b><br><b>C050J300.5048</b><br><b>C050J300.5049</b><br><b>C050J300.5050</b> | <b>C0100501.5046</b><br><b>C0100501.5047</b><br><b>C0100501.5048</b><br><b>C0100501.5049</b><br><b>C0100501.5050</b><br><b>C0100501.5051</b><br><b>C0100501.5052</b> |
|  217                                                      |  217            |  217            |  217                              |  217                              |  217                                                                            |

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
Rd

Zubehör  
Accessories

1/4 - 28  
5/16 - 24  
3/8 - 24  
7/16 - 20  
1/2 - 20  
9/16 - 18  
5/8 - 18  
3/4 - 16  
7/8 - 14  
1" - 12  
1 1/8 - 12  
1 1/4 - 12  
1 3/8 - 12  
1 1/2 - 12

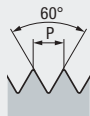

Spiralbohrer siehe Seite 11 - 70

Twist drills, see page 11 - 70

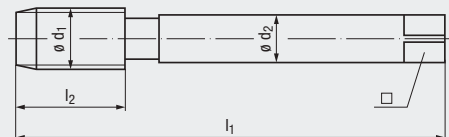
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# UNF

ASME B1.1



≈ DIN 374



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

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max. 3 x d<sub>1</sub>



|                  |                                                                                                   |                    |                                                           |
|------------------|---------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------|
| <b>P</b> 1.1-3.1 | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1 | <b>P</b> 1.1-3.1   | <b>P</b> 1.1-4.1<br><b>N</b> 2.2, 2.4-2.5<br><b>S</b> 1.1 |
| <b>Enorm 2-Z</b> | <b>Enorm 2-Z GLT-1</b>                                                                            | <b>Enorm 2-Z/E</b> | <b>Enorm 2-Z/E TIN</b>                                    |
| C0503500.5043    |                                                                                                   |                    |                                                           |
| C0503500.5044    |                                                                                                   |                    |                                                           |
| C0503500.5045    |                                                                                                   |                    |                                                           |
| C0503500.5046    | C050C400.5046                                                                                     | C0513500.5046      | C0513700.5046                                             |
| C0503500.5047    | C050C400.5047                                                                                     | C0513500.5047      | C0513700.5047                                             |
| C0503500.5048    | C050C400.5048                                                                                     | C0513500.5048      | C0513700.5048                                             |
| C0503500.5049    | C050C400.5049                                                                                     | C0513500.5049      | C0513700.5049                                             |
| C0503500.5050    | C050C400.5050                                                                                     | C0513500.5050      | C0513700.5050                                             |
| C0503500.5051    | C050C400.5051                                                                                     | C0513500.5051      | C0513700.5051                                             |
| C0503500.5052    | C050C400.5052                                                                                     | C0513500.5052      | C0513700.5052                                             |
| C0503500.5053    |                                                                                                   |                    |                                                           |
| » 218            | » 218                                                                                             | » 218              | » 219                                                     |

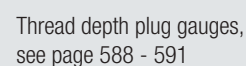
≈ DIN 371



|                        |   |
|------------------------|---|
| Product Finder         |   |
| V <sub>c</sub>         | M |
| MF                     |   |
| UNC<br>UN-3            |   |
| UNF<br>UNEF            |   |
| G, Rp<br>NPSM, NPSF    |   |
| NPT, NPTF<br>Rc, W     |   |
| BSW, BSF               |   |
| Pg                     |   |
| MJ<br>UNJC, UNJF       |   |
| EG (STI)               |   |
| SELF-LOCK              |   |
| Tr, Tr-F<br>Rd         |   |
| Zubehör<br>Accessories |   |



2) Vorbohrdurchmesser für Gewindebohrer mit Übermaß um 0,05 mm anheben  
Increase drill diameter for taps with oversize by 0.05 mm

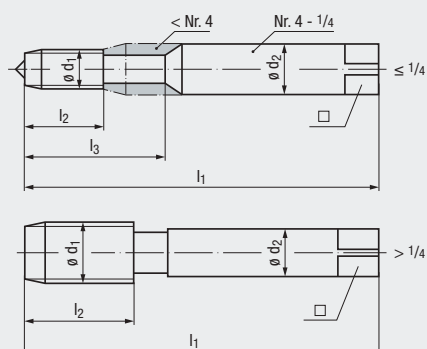


|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |



≈ DIN  
2181

STEEL  
Steel  
materials



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

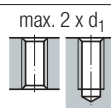
2BX

HSSE

C / 2-3

E / 0

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

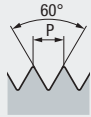
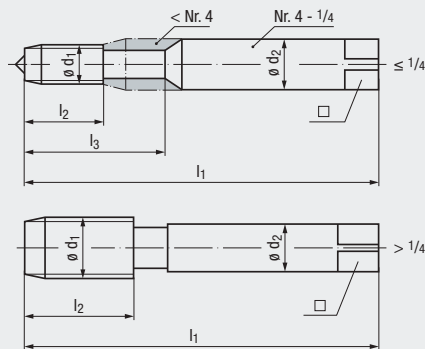
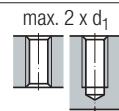
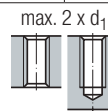
» 78

**K** 1.1-4.2  
**N** 2.3

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □    |       | Rekord<br>A-STEEL |
|--------------------------|------------------|----------------|----------------|----------------|------------------|------|-------|-------------------|
| Nr. 1 0.0730             | 72               | 36             | 8              | —              | 2,8              | 2,1  | 1,55  | A0101001.5034     |
| Nr. 2 0.0860             | 64               | 36             | 9              | —              | 2,8              | 2,1  | 1,85  | A0101001.5035     |
| Nr. 3 0.0990             | 56               | 40             | 9              | —              | 2,8              | 2,1  | 2,15  |                   |
| Nr. 4 0.1120             | 48               | 40             | 10             | 18             | 3,5              | 2,7  | 2,4   | A0101001.5037     |
| Nr. 5 0.1250             | 44               | 40             | 10             | 18             | 3,5              | 2,7  | 2,7   |                   |
| Nr. 6 0.1380             | 40               | 45             | 11             | 20             | 4                | 3    | 2,95  | A0101001.5039     |
| Nr. 8 0.1640             | 36               | 45             | 12             | 22             | 4,5              | 3,4  | 3,5   | A0101001.5040     |
| Nr. 10 0.1900            | 32               | 50             | 14             | 25             | 6                | 4,9  | 4,1   | A0101001.5041     |
| Nr. 12 0.2160            | 28               | 56             | 16             | 28             | 6                | 4,9  | 4,6   |                   |
| 1/4 0.2500               | 28               | 56             | 16             | 28             | 6                | 4,9  | 5,5   | A0101001.5043     |
| 5/16 0.3125              | 24               | 63             | 17             | —              | 6                | 4,9  | 6,9   | A0101001.5044     |
| 3/8 0.3750               | 24               | 63             | 18             | —              | 7                | 5,5  | 8,5   | A0101001.5045     |
| 7/16 0.4375              | 20               | 70             | 22             | —              | 8                | 6,2  | 9,9   | A0101001.5046     |
| 1/2 0.5000               | 20               | 70             | 22             | —              | 9                | 7    | 11,5  | A0101001.5047     |
| 9/16 0.5625              | 18               | 70             | 20             | —              | 11               | 9    | 12,9  |                   |
| 5/8 0.6250               | 18               | 70             | 20             | —              | 12               | 9    | 14,5  | A0101001.5049     |
| 3/4 0.7500               | 16               | 80             | 22             | —              | 14               | 11   | 17,5  | A0101001.5050     |
| 7/8 0.8750               | 14               | 80             | 22             | —              | 18               | 14,5 | 20,4  |                   |
| 1" 1.0000                | 12               | 90             | 22             | —              | 18               | 14,5 | 23,25 | A0101001.5052     |
| 1 1/8 1.1250             | 12               | 90             | 22             | —              | 22               | 18   | 26,5  | A0101001.5053     |
| 1 1/4 1.2500             | 12               | 90             | 22             | —              | 22               | 18   | 29,5  | A0101001.5054     |
| 1 3/8 1.3750             | 12               | 125            | 30             | —              | 28               | 22   | 32,75 | A0101001.5055     |
| 1 1/2 1.5000             | 12               | 125            | 30             | —              | 28               | 22   | 36    | A0101001.5056     |

**UNF**

ASME B1.1

≈ DIN  
2181Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

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P 1.1-3.1

P 1.1-3.1

P 1.1-3.1

| Ø d <sub>1</sub><br>inch | inch   | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □    |       | HGB-Set<br>V-Nr.1 | HGB-Set<br>F  | HGB-Set-2S<br>(Nr.1, F) |
|--------------------------|--------|------------------|----------------|----------------|----------------|------------------|------|-------|-------------------|---------------|-------------------------|
| Nr. 1                    | 0.0730 | 72               | 36             | 8              | —              | 2,8              | 2,1  | 1,55  | H0211009.5034     | H0211001.5034 | H0201001.5034           |
| Nr. 2                    | 0.0860 | 64               | 36             | 9              | —              | 2,8              | 2,1  | 1,85  | H0211009.5035     | H0211001.5035 | H0201001.5035           |
| Nr. 3                    | 0.0990 | 56               | 40             | 9              | —              | 2,8              | 2,1  | 2,15  |                   |               |                         |
| Nr. 4                    | 0.1120 | 48               | 40             | 10             | 18             | 3,5              | 2,7  | 2,4   | H0211009.5037     | H0211001.5037 | H0201001.5037           |
| Nr. 5                    | 0.1250 | 44               | 40             | 10             | 18             | 3,5              | 2,7  | 2,7   |                   |               |                         |
| Nr. 6                    | 0.1380 | 40               | 45             | 11             | 20             | 4                | 3    | 2,95  | H0211009.5039     | H0211001.5039 | H0201001.5039           |
| Nr. 8                    | 0.1640 | 36               | 45             | 12             | 22             | 4,5              | 3,4  | 3,5   | H0211009.5040     | H0211001.5040 | H0201001.5040           |
| Nr. 10                   | 0.1900 | 32               | 50             | 14             | 25             | 6                | 4,9  | 4,1   | H0211009.5041     | H0211001.5041 | H0201001.5041           |
| Nr. 12                   | 0.2160 | 28               | 56             | 16             | 28             | 6                | 4,9  | 4,6   |                   |               |                         |
| 1/4                      | 0.2500 | 28               | 56             | 16             | 28             | 6                | 4,9  | 5,5   | H0211009.5043     | H0211001.5043 | H0201001.5043           |
| 5/16                     | 0.3125 | 24               | 63             | 17             | —              | 6                | 4,9  | 6,9   | H0211009.5044     | H0211001.5044 | H0201001.5044           |
| 3/8                      | 0.3750 | 24               | 63             | 18             | —              | 7                | 5,5  | 8,5   | H0211009.5045     | H0211001.5045 | H0201001.5045           |
| 7/16                     | 0.4375 | 20               | 70             | 22             | —              | 8                | 6,2  | 9,9   | H0211009.5046     | H0211001.5046 | H0201001.5046           |
| 1/2                      | 0.5000 | 20               | 70             | 20             | —              | 9                | 7    | 11,5  | H0211009.5047     | H0211001.5047 | H0201001.5047           |
| 9/16                     | 0.5625 | 18               | 70             | 20             | —              | 11               | 9    | 12,9  |                   |               |                         |
| 5/8                      | 0.6250 | 18               | 70             | 20             | —              | 12               | 9    | 14,5  | H0211009.5049     | H0211001.5049 | H0201001.5049           |
| 3/4                      | 0.7500 | 16               | 80             | 22             | —              | 14               | 11   | 17,5  | H0211009.5050     | H0211001.5050 | H0201001.5050           |
| 7/8                      | 0.8750 | 14               | 80             | 22             | —              | 18               | 14,5 | 20,4  |                   |               |                         |
| 1"                       | 1.0000 | 12               | 90             | 22             | —              | 18               | 14,5 | 23,25 | H0211009.5052     | H0211001.5052 | H0201001.5052           |
| 1 1/8                    | 1.1250 | 12               | 90             | 22             | —              | 22               | 18   | 26,5  | H0211009.5053     | H0211001.5053 | H0201001.5053           |
| 1 1/4                    | 1.2500 | 12               | 90             | 22             | —              | 22               | 18   | 29,5  | H0211009.5054     | H0211001.5054 | H0201001.5054           |
| 1 3/8                    | 1.3750 | 12               | 125            | 30             | —              | 28               | 22   | 32,75 | H0211009.5055     | H0211001.5055 | H0201001.5055           |
| 1 1/2                    | 1.5000 | 12               | 125            | 30             | —              | 28               | 22   | 36    | H0211009.5056     | H0211001.5056 | H0201001.5056           |



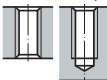
Verstellbare Windeisen siehe Seite 305

Adjustable tap wrenches, see page 305

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| Product Finder | <div><div>UNF</div><div>ASME B1.1</div></div> <div><div><div><div><div><div>60°</div><div>P</div></div><div><div></div><div></div></div></div><div><div></div><div></div></div></div></div><div><div><div><div>≈ 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1) Der Vorschneider Nr.1Z mit Führungszapfen ist eine zusätzliche Hilfe zum winkelrechten Anschneiden von Hand. Er kann z.B. auf der Maschine weggelassen werden. Die Profilabstufung von Nr.1Z und Nr.1 ist gleich.  
 The taper tap No. 1Z with cylindrical pilot is an additional aid for true alignment especially when tapping by hand. It can be deleted when tapping by machine. The profile graduation of No.1Z, and No.1 is the same.



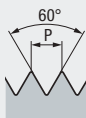
|                                                                                                                                                                                                                        |                                                                                                                                                                                                                        |  |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------|
|                                                                                                                                        |                                                                                                                                        |  |           |
| <br>2)                                                                                                                                |                                                                                                                                       |  |           |
| 2BX                                                                                                                                                                                                                    | 2BX                                                                                                                                                                                                                    |  |           |
| HSSE                                                                                                                                                                                                                   | HSSE                                                                                                                                                                                                                   |  |           |
| C / 2-3                                                                                                                                                                                                                | C / 2-3                                                                                                                                                                                                                |  |           |
| O / P                                                                                                                                                                                                                  | O / P                                                                                                                                                                                                                  |  |           |
| <div>max. 2 x d<sub>1</sub></div>                                                                                                     |                                                                                                                                                                                                                        |  |           |
| <div><div>P</div><div>1.1-5.1</div></div> <div><div>M</div><div>1.1-4.1</div></div> <div><div>K</div><div>1.1-4.2</div></div> <div><div>N</div><div>1.1-2.6</div></div> <div><div>S</div><div>2.1-2.2, 2.4</div></div> | <div><div>P</div><div>1.1-5.1</div></div> <div><div>M</div><div>1.1-4.1</div></div> <div><div>K</div><div>1.1-4.2</div></div> <div><div>N</div><div>1.1-2.6</div></div> <div><div>S</div><div>2.1-2.2, 2.4</div></div> |  |           |
| WM-Set-3S<br>(Nr.1Z, Nr.1, F)                                                                                                                                                                                          | WM-Set-2S<br>(Nr.1, F)                                                                                                                                                                                                 |  |           |
| H0453001.5043                                                                                                                                                                                                          | H0483001.5043                                                                                                                                                                                                          |  | 1/4 - 28  |
| H0453001.5044                                                                                                                                                                                                          | H0483001.5044                                                                                                                                                                                                          |  | 5/16 - 24 |
| H0453001.5045                                                                                                                                                                                                          | H0483001.5045                                                                                                                                                                                                          |  | 3/8 - 24  |
| H0453001.5046                                                                                                                                                                                                          | H0483001.5046                                                                                                                                                                                                          |  | 7/16 - 20 |
| H0453001.5047                                                                                                                                                                                                          | H0483001.5047                                                                                                                                                                                                          |  | 1/2 - 20  |
| H0453001.5049                                                                                                                                                                                                          | H0483001.5049                                                                                                                                                                                                          |  | 9/16 - 18 |
| H0453001.5050                                                                                                                                                                                                          | H0483001.5050                                                                                                                                                                                                          |  | 5/8 - 18  |
|                                                                                                                                                                                                                        |                                                                                                                                                                                                                        |  | 3/4 - 16  |
| H0453001.5052                                                                                                                                                                                                          | H0483001.5052                                                                                                                                                                                                          |  | 7/8 - 14  |
|                                                                                                                                                                                                                        |                                                                                                                                                                                                                        |  | 1" - 12   |

2) Beim Gewindebohren von Hand in Durchgangslöcher entfällt Nr.1  
No. 1 is not needed when tapping in through holes by hand

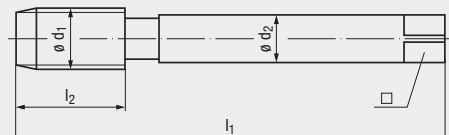
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# UNEF

ASME B1.1



≈ DIN  
374



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

**STEEL**  
Steel  
materials



**VA**  
Stainless steel  
materials



2BX

2B

2B

HSSE

HSSE

TIN

C / 2-3

R15

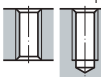
B / 4-5

E / 0

E / 1,5-2

E / 0 / P

max. 2 x d<sub>1</sub>



max. 2 x d<sub>1</sub>



max. 3 x d<sub>1</sub>



**K** 1.1-4.2  
**N** 2.3

**P** 2.1-3.1

**P** 1.1-4.1

**Rekord**  
2A-STEEL

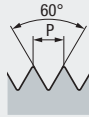
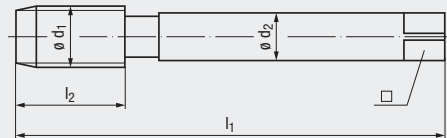
**Rekord**  
2D-STEEL/E

**Rekord**  
2B-VA  
TIN

| ø d <sub>1</sub><br>inch | inch   | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |       |               |                      |                      |
|--------------------------|--------|------------------|----------------|----------------|------------------|------|-------|---------------|----------------------|----------------------|
| 1/4                      | 0.2500 | 32               | 80             | 14             | 4,5              | 3,4  | 5,55  | C0101001.5058 | <b>C0461000.5058</b> | <b>C0203100.5058</b> |
| 5/16                     | 0.3125 | 32               | 80             | 14             | 6                | 4,9  | 7,15  | C0101001.5059 | <b>C0461000.5059</b> | <b>C0203100.5059</b> |
| 3/8                      | 0.3750 | 32               | 90             | 18             | 7                | 5,5  | 8,7   | C0101001.5060 | <b>C0461000.5060</b> | <b>C0203100.5060</b> |
| 7/16                     | 0.4375 | 28               | 90             | 18             | 8                | 6,2  | 10,2  | C0101001.5061 | <b>C0461000.5061</b> | <b>C0203100.5061</b> |
| 1/2                      | 0.5000 | 28               | 100            | 18             | 9                | 7    | 11,8  | C0101001.5062 | <b>C0461000.5062</b> | <b>C0203100.5062</b> |
| 9/16                     | 0.5625 | 24               | 100            | 18             | 11               | 9    | 13,2  | C0101001.5063 | <b>C0461000.5063</b> | <b>C0203100.5063</b> |
| 5/8                      | 0.6250 | 24               | 100            | 18             | 12               | 9    | 14,8  | C0101001.5064 | <b>C0461000.5064</b> | <b>C0203100.5064</b> |
| 3/4                      | 0.7500 | 20               | 110            | 25             | 14               | 11   | 17,8  | C0101001.5066 | <b>C0461000.5066</b> | <b>C0203100.5066</b> |
| 7/8                      | 0.8750 | 20               | 125            | 25             | 18               | 14,5 | 20,95 | C0101001.5068 | <b>C0461000.5068</b> | <b>C0203100.5068</b> |
| 1"                       | 1.0000 | 20               | 140            | 28             | 18               | 14,5 | 24,15 | C0101001.5070 | <b>C0461000.5070</b> | <b>C0203100.5070</b> |

**UNEF**

ASME B1.1

≈ DIN  
374Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

» 78

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □   |      |       |               |  |               |               |
|--------------------------|------------------|----------------|----------------|------------------|-----|------|-------|---------------|--|---------------|---------------|
| 1/4                      | 0.2500           | 32             | 80             | 14               | 4,5 | 3,4  | 5,55  | C020C300.5058 |  | C0503500.5058 | C050C400.5058 |
| 5/16                     | 0.3125           | 32             | 80             | 14               | 6   | 4,9  | 7,15  | C020C300.5059 |  | C0503500.5059 | C050C400.5059 |
| 3/8                      | 0.3750           | 32             | 90             | 18               | 7   | 5,5  | 8,7   | C020C300.5060 |  | C0503500.5060 | C050C400.5060 |
| 7/16                     | 0.4375           | 28             | 90             | 18               | 8   | 6,2  | 10,2  | C020C300.5061 |  | C0503500.5061 | C050C400.5061 |
| 1/2                      | 0.5000           | 28             | 100            | 18               | 9   | 7    | 11,8  | C020C300.5062 |  | C0503500.5062 | C050C400.5062 |
| 9/16                     | 0.5625           | 24             | 100            | 18               | 11  | 9    | 13,2  | C020C300.5063 |  | C0503500.5063 | C050C400.5063 |
| 5/8                      | 0.6250           | 24             | 100            | 18               | 12  | 9    | 14,8  | C020C300.5064 |  | C0503500.5064 | C050C400.5064 |
| 3/4                      | 0.7500           | 20             | 110            | 25               | 14  | 11   | 17,8  | C020C300.5066 |  | C0503500.5066 | C050C400.5066 |
| 7/8                      | 0.8750           | 20             | 125            | 25               | 18  | 14,5 | 20,95 | C020C300.5068 |  | C0503500.5068 | C050C400.5068 |
| 1"                       | 1.0000           | 20             | 140            | 28               | 18  | 14,5 | 24,15 | C020C300.5070 |  | C0503500.5070 | C050C400.5070 |

**VA**  
Stainless steel  
materials

2B

GLT-1

HSSE

B / 4-5

E / O / P

max. 3 x d<sub>1</sub>**P** 1.1-4.1**M** 1.1-4.1**N** 2.2**Rekord**  
2B-VA  
GLT-1**Z**  
CNC-controlled  
machines

new

l<sub>2</sub> ≈ 10 x P

new

l<sub>2</sub> ≈ 10 x P

2B

HSSE

R45

C / 2-3

E / O / P

max. 3 x d<sub>1</sub>**P** 1.1-3.1**P** 1.1-4.1**M** 1.1-4.1**N** 1.4, 2.1-2.2**N** 2.4-2.5**S** 1.1**Enorm**  
2-Z**Enorm**  
2-Z  
GLT-1Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

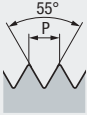
SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

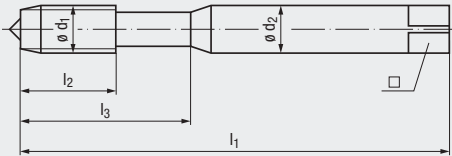


**G (BSP)**

DIN EN ISO 228



≈ DIN 371



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| Nenngröße<br>Nom. size |                        |                  |                |                |                |                  |    |      |  | VHM-Rekord<br>1A-HCUT/D<br>TICN | VHM-Rekord<br>1A-HCUT/C<br>TICN |
|------------------------|------------------------|------------------|----------------|----------------|----------------|------------------|----|------|--|---------------------------------|---------------------------------|
| Ø d <sub>1</sub>       | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □  |      |  |                                 |                                 |
| <b>G</b> 1/8           | 9,73                   | 28               | 100            | 18             | 38             | 10               | 8  | 8,8  |  | B016K101.4035                   | B010K101.4035                   |
| 1/4                    | 13,16                  | 19               | 110            | 24             | 44             | 14               | 11 | 11,9 |  | B016K101.4036                   | B010K101.4036                   |

2) Achtung: VHM-Rekord 1A-HCUT/D-TICN als Vorschneider verwenden!  
Please note: Use solid carbide tap VHM-Rekord 1A-HCUT/D-TICN as No.1 tap!

**HCUT**  
Hardened  
steels



2)

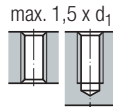
„X“

TICN

VHM

D / 4-5

O / P



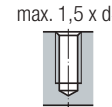
„X“

TICN

VHM

C / 2-3

O / P



H 1.3-1.4

H 1.3-1.4

Product  
Finder

V<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

**G** Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
Rd

Zubehör  
Accessories



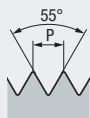
Spiralbohrer Typ EF-Drill-HCUT  
siehe Seite 62

Twist drills type EF-Drill-HCUT,  
see page 62

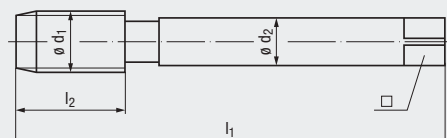
- Product Finder
- V<sub>c</sub>
- M
- MF
- UNC  
UN-8
- UNF  
UNEF
- G, Rp  
NPSM, NPSF
- NPT, NPTF  
Rc, W
- BSW, BSF
- Pg
- MJ  
UNJC, UNJF
- EG (STI)
- SELF-LOCK
- Tr, Tr-F  
Rd
- Zubehör  
Accessories

# G (BSP)

DIN EN ISO 228



DIN  
5156



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| Nenngröße<br>Nom. size<br>ø d <sub>1</sub>                                                   |                                                                                               |                  |                |                |                  |    |                                                                                      | Rekord<br>2A-STEEL | Rekord<br>2B-STEEL-L | Rekord<br>2B-STEEL-L<br>TIN | Rekord<br>2D-STEEL |               |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------|----------------|----------------|------------------|----|--------------------------------------------------------------------------------------|--------------------|----------------------|-----------------------------|--------------------|---------------|
|                                                                                              | ø d <sub>1</sub><br>mm                                                                        | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □  |   |                    |                      |                             |                    |               |
| <b>G</b>                                                                                     | 1/16                                                                                          | 7,72             | 28             | 90             | 17               | 6  | 4,9                                                                                  | 6,8                | C0101001.4034        |                             |                    | C0451001.4034 |
|                                                                                              | 1/8                                                                                           | 9,73             | 28             | 90             | 18               | 7  | 5,5                                                                                  | 8,8                | C0101001.4035        | C0208901.4035               | C0208401.4035      | C0451001.4035 |
|                                                                                              | 1/4                                                                                           | 13,16            | 19             | 100            | 22               | 11 | 9                                                                                    | 11,8               | C0101001.4036        | C0208901.4036               | C0208401.4036      | C0451001.4036 |
|                                                                                              | 3/8                                                                                           | 16,66            | 19             | 100            | 22               | 12 | 9                                                                                    | 15,25              | C0101001.4037        | C0208901.4037               | C0208401.4037      | C0451001.4037 |
|                                                                                              | 1/2                                                                                           | 20,96            | 14             | 125            | 25               | 16 | 12                                                                                   | 19                 | C0101001.4038        | C0208901.4038               | C0208401.4038      | C0451001.4038 |
|                                                                                              | 5/8                                                                                           | 22,91            | 14             | 125            | 25               | 18 | 14,5                                                                                 | 21                 | C0101001.4039        | C0208901.4039               | C0208401.4039      | C0451001.4039 |
|                                                                                              | 3/4                                                                                           | 26,44            | 14             | 140            | 28               | 20 | 16                                                                                   | 24,5               | C0101001.4040        | C0208901.4040               | C0208401.4040      | C0451001.4040 |
|                                                                                              | 7/8                                                                                           | 30,20            | 14             | 150            | 28               | 22 | 18                                                                                   | 28,25              | C0101001.4041        |                             |                    | C0451001.4041 |
|                                                                                              | 1"                                                                                            | 33,25            | 11             | 160            | 30               | 25 | 20                                                                                   | 30,75              | C0101001.4042        | C0208901.4042               | C0208401.4042      | C0451001.4042 |
|                                                                                              | 1 1/8                                                                                         | 37,90            | 11             | 170            | 30               | 28 | 22                                                                                   | 35,5               | C0101001.4043        | C0208901.4043               |                    | C0451001.4043 |
|                                                                                              | 1 1/4                                                                                         | 41,91            | 11             | 170            | 30               | 32 | 24                                                                                   | 39,5               | C0101001.4044        | C0208901.4044               |                    | C0451001.4044 |
|                                                                                              | 1 3/8                                                                                         | 44,32            | 11             | 180            | 32               | 36 | 29                                                                                   | 41,75              | C0101001.4045        | C0208901.4045               |                    | C0451001.4045 |
|                                                                                              | 1 1/2                                                                                         | 47,80            | 11             | 190            | 32               | 36 | 29                                                                                   | 45,25              | C0101001.4046        | C0208901.4046               |                    | C0451001.4046 |
|                                                                                              | 1 5/8                                                                                         | 52,00            | 11             | 190            | 32               | 40 | 32                                                                                   | 49,5               | C0101001.4047        | C0208901.4047               |                    |               |
|                                                                                              | 1 3/4                                                                                         | 53,75            | 11             | 190            | 32               | 40 | 32                                                                                   | 51                 | C0101001.4048        | C0208901.4048               |                    | C0451001.4048 |
|                                                                                              | 2"                                                                                            | 59,61            | 11             | 220            | 40               | 45 | 35                                                                                   | 57                 | C0101001.4050        | C0208901.4050               |                    | C0451001.4050 |
|                                                                                              | ≈ DIN 371  |                  |                |                |                  |    |                                                                                      |                    |                      |                             |                    |               |
| DIN 5157  |                                                                                               |                  |                |                |                  |    |  | 238                |                      |                             |                    |               |

| STEEL<br>Steel materials                                                           |                                                                                   |                                                                                    |                                                                                   | VA<br>Stainless steel materials                                                      |                                                                                     |                                                                                     |             |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------|
|   |  |   |  |     |  |  |             |
|   |  |   |  |     |  |  |             |
| $l_2 \approx 10 \times P$                                                          |                                                                                   | $l_2 \approx 10 \times P$                                                          |                                                                                   |                                                                                      |                                                                                     |                                                                                     |             |
| „X“                                                                                | „X“                                                                               | „X“                                                                                | „X“                                                                               | „X“                                                                                  | „X“                                                                                 | „X“                                                                                 |             |
| TIN                                                                                | TIN                                                                               | TIN                                                                                | TIN                                                                               | NT                                                                                   | TIN                                                                                 | GLT-1                                                                               |             |
| HSSE                                                                               | HSSE                                                                              | HSSE                                                                               | HSSE                                                                              | HSSE                                                                                 | HSSE                                                                                | HSSE                                                                                |             |
| R15                                                                                | R15                                                                               | R35                                                                                | R35                                                                               |                                                                                      |                                                                                     |                                                                                     |             |
| E / 1,5-2                                                                          | C / 2-3                                                                           | C / 2-3                                                                            | C / 2-3                                                                           | B / 4-5                                                                              | B / 4-5                                                                             | B / 4-5                                                                             |             |
| E / 0                                                                              | E / 0                                                                             | E / 0                                                                              | E / 0                                                                             | E / 0 / P                                                                            | E / 0 / P                                                                           | E / 0 / P                                                                           |             |
| max. 2 x d <sub>1</sub>                                                            |                                                                                   | max. 2,5 x d <sub>1</sub>                                                          |                                                                                   | max. 3 x d <sub>1</sub>                                                              |                                                                                     |                                                                                     |             |
|  |                                                                                   |  |                                                                                   |  |                                                                                     |                                                                                     |             |
| P 2.1-3.1                                                                          | P 3.1-4.1                                                                         | P 1.1-3.1<br>N 2.2                                                                 | P 1.1-3.1<br>N 2.2                                                                | P 2.1-3.1<br>N 2.2, 2.5                                                              | P 1.1-4.1                                                                           | P 1.1-4.1<br>M 1.1-4.1<br>N 2.2                                                     |             |
| Rekord 2D-STEEL/E                                                                  | Rekord 2DF-STEEL TIN                                                              | Enorm 2-STEEL                                                                      | Enorm 2-STEEL TIN                                                                 | Rekord 2B-VA NT                                                                      | Rekord 2B-VA TIN                                                                    | Rekord 2B-VA GLT-1                                                                  |             |
| C0461001.4034                                                                      | C0401401.4035                                                                     | C0501001.4035                                                                      | C0501401.4035                                                                     | C0203001.4035                                                                        | C0203101.4035                                                                       | C020C301.4035                                                                       | G 1/16 - 28 |
| C0461001.4035                                                                      | C0401401.4036                                                                     | C0501001.4036                                                                      | C0501401.4036                                                                     | C0203001.4036                                                                        | C0203101.4036                                                                       | C020C301.4036                                                                       | 1/8 - 28    |
| C0461001.4036                                                                      | C0401401.4037                                                                     | C0501001.4037                                                                      | C0501401.4037                                                                     | C0203001.4037                                                                        | C0203101.4037                                                                       | C020C301.4037                                                                       | 1/4 - 19    |
| C0461001.4037                                                                      | C0401401.4038                                                                     | C0501001.4038                                                                      | C0501401.4038                                                                     | C0203001.4038                                                                        | C0203101.4038                                                                       | C020C301.4038                                                                       | 3/8 - 19    |
| C0461001.4038                                                                      |                                                                                   |                                                                                    |                                                                                   |                                                                                      |                                                                                     |                                                                                     | 1/2 - 14    |
| C0461001.4039                                                                      |                                                                                   |                                                                                    |                                                                                   |                                                                                      |                                                                                     |                                                                                     | 5/8 - 14    |
| C0461001.4040                                                                      |                                                                                   | C0501001.4040                                                                      | C0501401.4040                                                                     | C0203001.4040                                                                        | C0203101.4040                                                                       | C020C301.4040                                                                       | 3/4 - 14    |
| C0461001.4041                                                                      |                                                                                   | C0501001.4041                                                                      | C0501401.4041                                                                     |                                                                                      |                                                                                     |                                                                                     | 7/8 - 14    |
| C0461001.4042                                                                      |                                                                                   | C0501001.4042                                                                      | C0501401.4042                                                                     | C0203001.4042                                                                        | C0203101.4042                                                                       | C020C301.4042                                                                       | 1" - 11     |
|                                                                                    |                                                                                   | C0501001.4043                                                                      | C0501401.4043                                                                     |                                                                                      |                                                                                     |                                                                                     | 1 1/8 - 11  |
|                                                                                    |                                                                                   | C0501001.4044                                                                      | C0501401.4044                                                                     |                                                                                      |                                                                                     |                                                                                     | 1 1/4 - 11  |
|                                                                                    |                                                                                   | C0501001.4045                                                                      | C0501401.4045                                                                     |                                                                                      |                                                                                     |                                                                                     | 1 3/8 - 11  |
|                                                                                    |                                                                                   | C0501001.4046                                                                      | C0501401.4046                                                                     |                                                                                      |                                                                                     |                                                                                     | 1 1/2 - 11  |
|                                                                                    |                                                                                   | C0501001.4047                                                                      | C0501401.4047                                                                     |                                                                                      |                                                                                     |                                                                                     | 1 5/8 - 11  |
|                                                                                    |                                                                                   | C0501001.4048                                                                      | C0501401.4048                                                                     |                                                                                      |                                                                                     |                                                                                     | 1 3/4 - 11  |
|                                                                                    |                                                                                   | C0501001.4050                                                                      | C0501401.4050                                                                     |                                                                                      |                                                                                     |                                                                                     | 2" - 11     |

Product Finder

V<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

Accessories

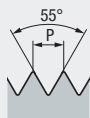




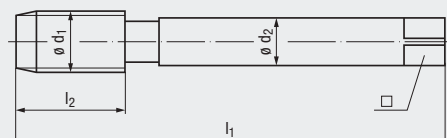
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# G (BSP)

DIN EN ISO 228



**DIN  
5156**



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

**VA**  
Stainless steel  
materials



l<sub>2</sub> ≈ 10 x P

**INOX**  
Stainless steel  
materials



l<sub>2</sub> ≈ 10 x P

**new**

„X“

HSSE

R35

C / 2-3

E / O / P

„X“

GLT-201

HSSE

R45

C / 2-3

E / O

max. 2,5 x d<sub>1</sub>



max. 2,5 x d<sub>1</sub>



**P** 1.1-3.1

**M** 1.1-2.1

**Enorm 2  
VA**

**Enorm 2  
INOX  
GLT-201**

| Nenngröße<br>Nom. size | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □  |      |          |  |  |
|------------------------|------------------------|------------------|----------------|----------------|------------------|----|------|----------|--|--|
| <b>G</b>               | 1/16                   | 7,72             | 28             | 90             | 17               | 6  | 4,9  | 6,8      |  |  |
|                        | 1/8                    | 9,73             | 28             | 90             | 18               | 7  | 5,5  | 8,8      |  |  |
|                        | 1/4                    | 13,16            | 19             | 100            | 22               | 11 | 9    | 11,8 2)  |  |  |
|                        | 3/8                    | 16,66            | 19             | 100            | 22               | 12 | 9    | 15,25 2) |  |  |
|                        | 1/2                    | 20,96            | 14             | 125            | 25               | 16 | 12   | 19 2)    |  |  |
|                        | 5/8                    | 22,91            | 14             | 125            | 25               | 18 | 14,5 | 21       |  |  |
|                        | 3/4                    | 26,44            | 14             | 140            | 28               | 20 | 16   | 24,5     |  |  |
|                        | 7/8                    | 30,20            | 14             | 150            | 28               | 22 | 18   | 28,25    |  |  |
|                        | 1"                     | 33,25            | 11             | 160            | 30               | 25 | 20   | 30,75    |  |  |
|                        | 1 1/8                  | 37,90            | 11             | 170            | 30               | 28 | 22   | 35,5     |  |  |
|                        | 1 1/4                  | 41,91            | 11             | 170            | 30               | 32 | 24   | 39,5     |  |  |
|                        | 1 3/8                  | 44,32            | 11             | 180            | 32               | 36 | 29   | 41,75    |  |  |
|                        | 1 1/2                  | 47,80            | 11             | 190            | 32               | 36 | 29   | 45,25    |  |  |
|                        | 1 5/8                  | 52,00            | 11             | 190            | 32               | 40 | 32   | 49,5     |  |  |
|                        | 1 3/4                  | 53,75            | 11             | 190            | 32               | 40 | 32   | 51       |  |  |
|                        | 2"                     | 59,61            | 11             | 220            | 40               | 45 | 35   | 57       |  |  |

≈ DIN 371



DIN 5157



2) Vorbohrdurchmesser für Gewindebohrer Rekord 2A-HCUT-PM-TiCN ab G 1/4 um 0,1 mm anheben  
Increase drill diameter for taps Rekord 2A-HCUT-PM-TiCN from G 1/4 by 0.1 mm

|                               |
|-------------------------------|
| Product Finder                |
| <b>V<sub>C</sub></b>          |
| <b>M</b>                      |
| <b>MF</b>                     |
| <b>UNC</b><br>UN-8            |
| <b>UNF</b><br>UNEF            |
| <b>G, Rp</b><br>NPSM, Rp      |
| <b>NPT, NPTF</b><br>Rc, W     |
| <b>BSW, BSF</b>               |
| <b>Pg</b>                     |
| <b>MJ</b><br>UNJC, UNJF       |
| <b>EG (STI)</b>               |
| <b>SELF-LOCK</b>              |
| <b>Tr, Tr-F</b><br>Rd         |
| <b>Zubehör</b><br>Accessories |

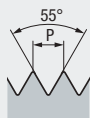


Quick-change tap holders  
type KSN/HD, see page 662 - 669

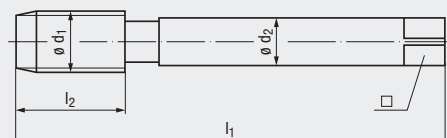
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# G (BSP)

DIN EN ISO 228



DIN  
5156



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Z  
CNC-controlled  
machines



new



new



new



new



„X“

GLT-1

HSSE-PM

R45

E / 1,5-2

E / 0

„X“

GLT-1

HSSE

R45

C / 2-3

E / 0 / P

„X“

GLT-1

HSSE

R45

C / 2-3

E / 0 / P

„X“

GLT-1

HSSE

R45

E / 1,5-2

E / 0 / P

Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

max. 3 x d<sub>1</sub>



Einsatzgebiete – Material  
Applications – material

» 78

P 1.1-4.1  
M 1.1-4.1  
K 1.1-3.2  
N 1.4, 2.1-2.2  
N 2.4-2.5  
S 1.1

P 1.1-3.1

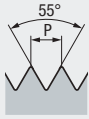
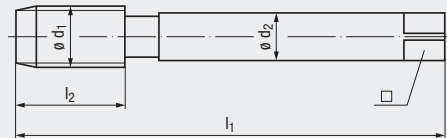
P 1.1-4.1  
M 1.1-4.1  
N 1.4, 2.1-2.2  
N 2.4-2.5  
S 1.1

P 1.1-3.1

| <p>Nenngröße<br/>Nom. size</p> <p>Ø d<sub>1</sub></p> | <p>Ø d<sub>1</sub><br/>mm</p> | <p>P<br/>Gg/1" (tpi)</p> | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □  |      | <p>Enorm<br/>2-Z/E-IKZ<br/>PM-GLT-1</p> | <p>Enorm<br/>2-Z</p> | <p>Enorm<br/>2-Z<br/>GLT-1</p> | <p>Enorm<br/>2-Z/E</p> |
|-------------------------------------------------------|-------------------------------|--------------------------|----------------|----------------|------------------|----|------|-----------------------------------------|----------------------|--------------------------------|------------------------|
| <b>G</b>                                              | 1/16                          | 7,72                     | 28             | 90             | 10               | 6  | 4,9  | 6,8                                     |                      |                                |                        |
|                                                       | 1/8                           | 9,73                     | 28             | 90             | 10               | 7  | 5,5  | 8,8                                     | C590A601.4035        | C0503501.4035                  | C0513501.4035          |
|                                                       | 1/4                           | 13,16                    | 19             | 100            | 15               | 11 | 9    | 11,8                                    | C590A601.4036        | C0503501.4036                  | C0513501.4036          |
|                                                       | 3/8                           | 16,66                    | 19             | 100            | 15               | 12 | 9    | 15,25                                   | C590A601.4037        | C0503501.4037                  | C0513501.4037          |
|                                                       | 1/2                           | 20,96                    | 14             | 125            | 17               | 16 | 12   | 19                                      | C590A601.4038        | C0503501.4038                  | C0513501.4038          |
|                                                       | 5/8                           | 22,91                    | 14             | 125            | 17               | 18 | 14,5 | 21                                      |                      | C0503501.4039                  | C0513501.4039          |
|                                                       | 3/4                           | 26,44                    | 14             | 140            | 20               | 20 | 16   | 24,5                                    | C590A601.4040        | C0503501.4040                  | C0513501.4040          |
|                                                       | 7/8                           | 30,20                    | 14             | 150            | 22               | 22 | 18   | 28,25                                   |                      |                                | C0513501.4041          |
|                                                       | 1"                            | 33,25                    | 11             | 160            | 24               | 25 | 20   | 30,75                                   | C590A601.4042        |                                | C0513501.4042          |
|                                                       | 1 1/8                         | 37,90                    | 11             | 170            | 24               | 28 | 22   | 35,5                                    |                      |                                |                        |
|                                                       | 1 1/4                         | 41,91                    | 11             | 170            | 25               | 32 | 24   | 39,5                                    |                      |                                | C0513501.4044          |
|                                                       | 1 3/8                         | 44,32                    | 11             | 180            | 27               | 36 | 29   | 41,75                                   |                      |                                |                        |
|                                                       | 1 1/2                         | 47,80                    | 11             | 190            | 27               | 36 | 29   | 45,25                                   |                      |                                | C0513501.4046          |
|                                                       | 1 5/8                         | 52,00                    | 11             | 190            | 27               | 40 | 32   | 49,5                                    |                      |                                |                        |
|                                                       | 1 3/4                         | 53,75                    | 11             | 190            | 27               | 40 | 32   | 51                                      |                      |                                |                        |
|                                                       | 2"                            | 59,61                    | 11             | 220            | 32               | 45 | 35   | 57                                      |                      |                                |                        |

**G (BSP)**

DIN EN ISO 228

DIN  
5156Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

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| Nenngröße<br>Nom. size | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □  |      |       | Enorm<br>2-Z/E<br>TIN | Enorm<br>2-Z/E<br>GLT-1 | Enorm<br>2-Z/E       | Enorm<br>2-Z/E<br>GLT-1 |
|------------------------|------------------------|------------------|----------------|----------------|------------------|----|------|-------|-----------------------|-------------------------|----------------------|-------------------------|
| <b>G</b>               | 1/16                   | 7,72             | 28             | 90             | 10               | 6  | 4,9  | 6,8   |                       |                         |                      |                         |
|                        | 1/8                    | 9,73             | 28             | 90             | 10               | 7  | 5,5  | 8,8   | <b>C0513701.4035</b>  | <b>C051C401.4035</b>    | <b>C0513531.4035</b> | <b>C051C431.4035</b>    |
|                        | 1/4                    | 13,16            | 19             | 100            | 15               | 11 | 9    | 11,8  | <b>C0513701.4036</b>  | <b>C051C401.4036</b>    | <b>C0513531.4036</b> | <b>C051C431.4036</b>    |
|                        | 3/8                    | 16,66            | 19             | 100            | 15               | 12 | 9    | 15,25 | <b>C0513701.4037</b>  | <b>C051C401.4037</b>    | <b>C0513531.4037</b> | <b>C051C431.4037</b>    |
|                        | 1/2                    | 20,96            | 14             | 125            | 17               | 16 | 12   | 19    | <b>C0513701.4038</b>  | <b>C051C401.4038</b>    | <b>C0513531.4038</b> | <b>C051C431.4038</b>    |
|                        | 5/8                    | 22,91            | 14             | 125            | 17               | 18 | 14,5 | 21    | C0513701.4039         | C051C401.4039           | C0513531.4039        | C051C431.4039           |
|                        | 3/4                    | 26,44            | 14             | 140            | 20               | 20 | 16   | 24,5  | <b>C0513701.4040</b>  | <b>C051C401.4040</b>    | C0513531.4040        | C051C431.4040           |
|                        | 7/8                    | 30,20            | 14             | 150            | 22               | 22 | 18   | 28,25 | C0513701.4041         | C051C401.4041           |                      |                         |
|                        | 1"                     | 33,25            | 11             | 160            | 24               | 25 | 20   | 30,75 | <b>C0513701.4042</b>  | <b>C051C401.4042</b>    | C0513531.4042        | C051C431.4042           |
|                        | 1 1/8                  | 37,90            | 11             | 170            | 24               | 28 | 22   | 35,5  |                       |                         |                      |                         |
|                        | 1 1/4                  | 41,91            | 11             | 170            | 25               | 32 | 24   | 39,5  |                       |                         |                      |                         |
|                        | 1 3/8                  | 44,32            | 11             | 180            | 27               | 36 | 29   | 41,75 |                       |                         |                      |                         |
|                        | 1 1/2                  | 47,80            | 11             | 190            | 27               | 36 | 29   | 45,25 |                       |                         |                      |                         |
|                        | 1 5/8                  | 52,00            | 11             | 190            | 27               | 40 | 32   | 49,5  |                       |                         |                      |                         |
|                        | 1 3/4                  | 53,75            | 11             | 190            | 27               | 40 | 32   | 51    |                       |                         |                      |                         |
|                        | 2"                     | 59,61            | 11             | 220            | 32               | 45 | 35   | 57    |                       |                         |                      |                         |

2) Vorbohrdurchmesser für Gewindebohrer mit Übermaß um 0,05 mm anheben  
Increase drill diameter for taps with oversize by 0.05 mm

max. 3 x d<sub>1</sub>

|                       |                       |                  |                       |
|-----------------------|-----------------------|------------------|-----------------------|
| <b>P</b> 1.1-4.1      | <b>P</b> 1.1-4.1      | <b>P</b> 1.1-3.1 | <b>P</b> 1.1-4.1      |
| <b>N</b> 2.2, 2.4-2.5 | <b>M</b> 1.1-4.1      |                  | <b>M</b> 1.1-4.1      |
| <b>S</b> 1.1          | <b>N</b> 1.4, 2.1-2.2 |                  | <b>N</b> 1.4, 2.1-2.2 |
|                       | <b>N</b> 2.4-2.5      |                  | <b>N</b> 2.4-2.5      |
|                       | <b>S</b> 1.1          |                  | <b>S</b> 1.1          |

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

**G** Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

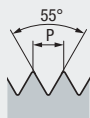
Accessories



|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

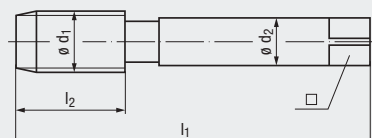
# G (BSP)

DIN EN ISO 228



**DIN  
5157**

**STEEL**  
Steel  
materials



**Technische Informationen**  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



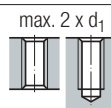
„X“

HSSE

C / 2-3

E / 0

**Gewindetiefe und Lochform**  
Thread depth and hole type



**Einsatzgebiete – Material**  
Applications – material

» 78

**K** 1.1-4.2  
**N** 2.3

| Nenngröße<br>Nom. size | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |       |
|------------------------|------------------------|------------------|----------------|----------------|------------------|------|-------|
| <b>G</b> 1/16          | 7,72                   | 28               | 63             | 17             | 6                | 4,9  | 6,8   |
| 1/8                    | 9,73                   | 28               | 63             | 18             | 7                | 5,5  | 8,8   |
| 1/4                    | 13,16                  | 19               | 70             | 20             | 11               | 9    | 11,8  |
| 3/8                    | 16,66                  | 19               | 70             | 20             | 12               | 9    | 15,25 |
| 1/2                    | 20,96                  | 14               | 80             | 22             | 16               | 12   | 19    |
| 5/8                    | 22,91                  | 14               | 80             | 22             | 18               | 14,5 | 21    |
| 3/4                    | 26,44                  | 14               | 90             | 22             | 20               | 16   | 24,5  |
| 7/8                    | 30,20                  | 14               | 90             | 22             | 22               | 18   | 28,25 |
| 1"                     | 33,25                  | 11               | 100            | 25             | 25               | 20   | 30,75 |
| 1 1/8                  | 37,90                  | 11               | 125            | 30             | 28               | 22   | 35,5  |
| 1 1/4                  | 41,91                  | 11               | 125            | 30             | 32               | 24   | 39,5  |
| 1 3/8                  | 44,32                  | 11               | 125            | 30             | 36               | 29   | 41,75 |
| 1 1/2                  | 47,80                  | 11               | 140            | 30             | 36               | 29   | 45,25 |
| 1 3/4                  | 53,75                  | 11               | 140            | 32             | 40               | 32   | 51    |
| 2"                     | 59,61                  | 11               | 160            | 36             | 45               | 35   | 57    |

**Rekord  
A-STEEL**

A0101001.4034  
**A0101001.4035**  
**A0101001.4036**  
**A0101001.4037**  
**A0101001.4038**  
A0101001.4039  
**A0101001.4040**  
A0101001.4041  
A0101001.4042  
A0101001.4043  
A0101001.4044  
A0101001.4045  
A0101001.4046  
A0101001.4048  
A0101001.4050

≈ DIN 371



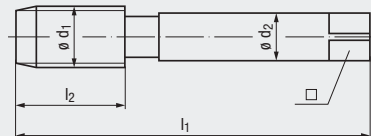
DIN 5156



» 232

# G (BSP)

DIN EN ISO 228

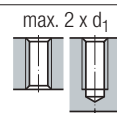
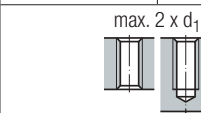

DIN  
5157

Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78



P 1.1-3.1

P 1.1-3.1

P 1.1-3.1

| Nenngröße<br>Nom. size<br>Ø d <sub>1</sub> | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |       | HGB-Set<br>V-Nr.1 | HGB-Set<br>F  | HGB-Set-2S<br>(Nr.1, F) |
|--------------------------------------------|------------------------|------------------|----------------|----------------|------------------|------|-------|-------------------|---------------|-------------------------|
| <b>G</b> 1/16                              | 7,72                   | 28               | 63             | 17             | 6                | 4,9  | 6,8   |                   |               |                         |
| 1/8                                        | 9,73                   | 28               | 63             | 18             | 7                | 5,5  | 8,8   | H0211009.4035     | H0211001.4035 | H0201001.4035           |
| 1/4                                        | 13,16                  | 19               | 70             | 20             | 11               | 9    | 11,8  | H0211009.4036     | H0211001.4036 | H0201001.4036           |
| 3/8                                        | 16,66                  | 19               | 70             | 20             | 12               | 9    | 15,25 | H0211009.4037     | H0211001.4037 | H0201001.4037           |
| 1/2                                        | 20,96                  | 14               | 80             | 22             | 16               | 12   | 19    | H0211009.4038     | H0211001.4038 | H0201001.4038           |
| 5/8                                        | 22,91                  | 14               | 80             | 22             | 18               | 14,5 | 21    | H0211009.4039     | H0211001.4039 | H0201001.4039           |
| 3/4                                        | 26,44                  | 14               | 90             | 22             | 20               | 16   | 24,5  | H0211009.4040     | H0211001.4040 | H0201001.4040           |
| 7/8                                        | 30,20                  | 14               | 90             | 22             | 22               | 18   | 28,25 |                   |               |                         |
| 1"                                         | 33,25                  | 11               | 100            | 25             | 25               | 20   | 30,75 | H0211009.4042     | H0211001.4042 | H0201001.4042           |
| 1 1/8                                      | 37,90                  | 11               | 125            | 30             | 28               | 22   | 35,5  | H0211009.4043     | H0211001.4043 | H0201001.4043           |
| 1 1/4                                      | 41,91                  | 11               | 125            | 30             | 32               | 24   | 39,5  | H0211009.4044     | H0211001.4044 | H0201001.4044           |
| 1 3/8                                      | 44,32                  | 11               | 125            | 30             | 36               | 29   | 41,75 | H0211009.4045     | H0211001.4045 | H0201001.4045           |
| 1 1/2                                      | 47,80                  | 11               | 140            | 30             | 36               | 29   | 45,25 | H0211009.4046     | H0211001.4046 | H0201001.4046           |
| 1 3/4                                      | 53,75                  | 11               | 140            | 32             | 40               | 32   | 51    | H0211009.4048     | H0211001.4048 | H0201001.4048           |
| 2"                                         | 59,61                  | 11               | 160            | 36             | 45               | 35   | 57    | H0211009.4050     | H0211001.4050 | H0201001.4050           |

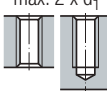


Verstellbare Windeisen siehe Seite 305

Adjustable tap wrenches, see page 305





|                                                                                                                     |                                                                                                               |  |  |                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                     |                               |  |  | <div>Product Finder</div> <div>V<sub>c</sub></div> <div>M</div> <div>MF</div> <div>UNC<br/>UN-8</div> <div>UNF<br/>UNEF</div> <div>G, Rp<br/>NPSM, NPSF</div> <div>NPT, NPTF<br/>Rc, W</div> <div>BSW, BSF</div> <div>Pg</div> <div>MJ<br/>UNJC, UNJF</div> <div>EG (STI)</div> <div>SELF-LOCK</div> <div>Tr, Tr-F<br/>Rd</div> <div>Zubehör<br/>Accessories</div> |
|  2)                                |                              |  |  |                                                                                                                                                                                                                                                                                                                                                                    |
| <div>„X“</div> <div>HSSE</div> <div>C / 2-3</div> <div>O / P</div>                                                  | <div>„X“</div> <div>HSSE</div> <div>C / 2-3</div> <div>O / P</div>                                            |  |  |                                                                                                                                                                                                                                                                                                                                                                    |
| <div>max. 2 x d<sub>1</sub></div>  |                                                                                                               |  |  |                                                                                                                                                                                                                                                                                                                                                                    |
| <div>P 1.1-5.1</div> <div>M 1.1-4.1</div> <div>K 1.1-4.2</div> <div>N 1.1-2.6</div> <div>S 2.1-2.2, 2.4</div>       | <div>P 1.1-5.1</div> <div>M 1.1-4.1</div> <div>K 1.1-4.2</div> <div>N 1.1-2.6</div> <div>S 2.1-2.2, 2.4</div> |  |  |                                                                                                                                                                                                                                                                                                                                                                    |
| <div>WM-Set-3S<br/>(Nr.1Z, Nr.1, F)</div>                                                                           | <div>WM-Set-2S<br/>(Nr.1, F)</div>                                                                            |  |  |                                                                                                                                                                                                                                                                                                                                                                    |
| <div>H0453001.4035</div> <div>H0453001.4036</div> <div>H0453001.4037</div> <div>H0453001.4038</div>                 | <div>H0483001.4035</div> <div>H0483001.4036</div> <div>H0483001.4037</div> <div>H0483001.4038</div>           |  |  | <div>G 1/8 - 28</div> <div>1/4 - 19</div> <div>3/8 - 19</div> <div>1/2 - 14</div> <div>5/8 - 14</div> <div>3/4 - 14</div> <div>1" - 11</div>                                                                                                                                                                                                                       |
| <div>H0453001.4040</div> <div>H0453001.4042</div>                                                                   | <div>H0483001.4040</div> <div>H0483001.4042</div>                                                             |  |  |                                                                                                                                                                                                                                                                                                                                                                    |

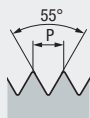


2) Beim Gewindebohren von Hand in Durchgangslöcher entfällt Nr.1  
No.1 is not needed when tapping in through holes by hand

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

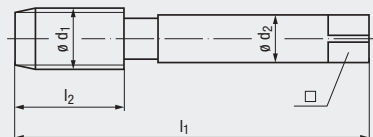
# G (BSP)

DIN EN ISO 228



≈ DIN  
5157

Für dünnwandige Messing-Rohre  
For thin-walled brass tubes



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

MS  
Copper-zinc  
alloys



„X“

„X“ +0,05 2)

„X“ +0,1 2)

HSSE

HSSE

HSSE

max. 1

max. 1

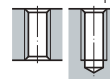
max. 1

E

E

E

max. 1 x d<sub>1</sub>



N 2,3, 2,6

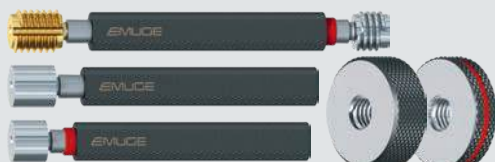
N 2,3, 2,6

N 2,3, 2,6

| Nenngröße<br>Nom. size<br>ø d <sub>1</sub> | ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |       | AUT-A<br>MS-R | AUT-A<br>MS-R | AUT-A<br>MS-R |
|--------------------------------------------|------------------------|------------------|----------------|----------------|------------------|------|-------|---------------|---------------|---------------|
| <b>G</b> 1/8                               | 9,73                   | 28               | 63             | 18             | 7                | 5,5  | 8,8   | A6622501.4035 | A6622531.4035 | A662254A.4035 |
| 1/4                                        | 13,16                  | 19               | 70             | 20             | 10 1)            | 8    | 11,8  | A6622501.4036 | A6622531.4036 | A662254A.4036 |
| 3/8                                        | 16,66                  | 19               | 70             | 20             | 12               | 9    | 15,25 | A6622501.4037 | A6622531.4037 | A662254A.4037 |
| 1/2                                        | 20,96                  | 14               | 80             | 22             | 15 1)            | 12   | 19    | A6622501.4038 | A6622531.4038 | A662254A.4038 |
| 3/4                                        | 26,44                  | 14               | 90             | 22             | 18 1)            | 14,5 | 24,5  | A6622501.4040 | A6622531.4040 | A662254A.4040 |
| 7/8                                        | 30,20                  | 14               | 90             | 22             | 18 1)            | 14,5 | 28,25 |               |               |               |
| 1"                                         | 33,25                  | 11               | 100            | 25             | 18 1)            | 14,5 | 30,75 | A6622501.4042 | A6622531.4042 | A662254A.4042 |
| 1 1/8                                      | 37,90                  | 11               | 125            | 30             | 18 1)            | 14,5 | 35,5  | A6622501.4043 |               |               |
| 1 1/4                                      | 41,91                  | 11               | 125            | 30             | 18 1)            | 14,5 | 39,5  | A6622501.4044 |               |               |
| 1 3/8                                      | 44,32                  | 11               | 125            | 30             | 18 1)            | 14,5 | 41,75 | A6622501.4045 |               |               |
| 1 1/2                                      | 47,80                  | 11               | 140            | 30             | 18 1)            | 14,5 | 45,25 | A6622501.4046 |               |               |

1) Spezieller AUT-Schaft  
Special shank for "AUT" taps

2) Vorbohrdurchmesser für Gewindebohrer mit Übermaß um 0,05 bzw. 0,1 mm anheben  
Increase drill diameter for taps with oversize by 0.05 resp. 0.1 mm

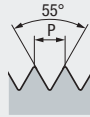
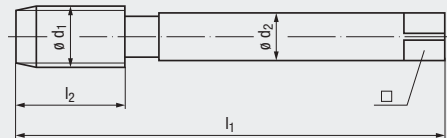


Gewindelehren  
siehe Seite 541 - 594

Thread gauges,  
see page 541 - 594

# Rp (BSPP)

DIN EN 10226-1, ISO 7-1


**DIN  
5156**
**STEEL**  
Steel  
materials

**Technische Informationen**  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

**Gewindetiefe und Lochform**  
Thread depth and hole type

**Einsatzgebiete – Material**  
Applications – material

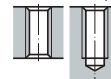
» 78

„X“

HSSE

C / 2-3

E / 0

max. 2 x d<sub>1</sub>

**K** 1.1-4.2  
**N** 2.3

**Rekord  
2A-STEEL**

| Nenngröße<br>Nom. size | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □   |       |                      |
|------------------------|------------------------|------------------|----------------|----------------|------------------|-----|-------|----------------------|
| <b>Rp</b> 1/16         | 7,72                   | 28               | 90             | 17             | 6                | 4,9 | 6,55  | C0101001.4091        |
| 1/8                    | 9,73                   | 28               | 90             | 18             | 7                | 5,5 | 8,6   | <b>C0101001.4092</b> |
| 1/4                    | 13,16                  | 19               | 100            | 22             | 11               | 9   | 11,5  | <b>C0101001.4093</b> |
| 3/8                    | 16,66                  | 19               | 100            | 22             | 12               | 9   | 15    | <b>C0101001.4094</b> |
| 1/2                    | 20,96                  | 14               | 125            | 25             | 16               | 12  | 18,5  | <b>C0101001.4095</b> |
| 3/4                    | 26,44                  | 14               | 140            | 28             | 20               | 16  | 24    | <b>C0101001.4096</b> |
| 1"                     | 33,25                  | 11               | 160            | 30             | 25               | 20  | 30,25 | <b>C0101001.4097</b> |

Zugehöriges Außengewinde ist kegelig, siehe Schneideisen Seite 535  
The appropriate external thread is tapered, see dies, page 535

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

**G, Rp**  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

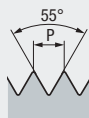
Tr, Tr-F  
Rd

Zubehör  
Accessories

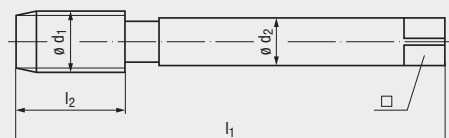

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# Rp (BSPP)

DIN EN 10226-1, ISO 7-1



DIN  
5156



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Z  
CNC-controlled  
machines



new



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

max. 3 x d<sub>1</sub>



P 1.1-3.1

P 1.1-4.1

M 1.1-4.1

N 1.4, 2.1-2.2

N 2.4-2.5

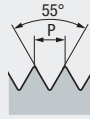
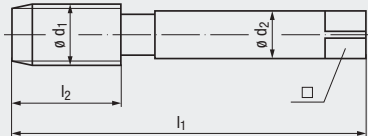
S 1.1

| Nenngröße<br>Nom. size | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □   |       | Enorm<br>2-Z/E       | Enorm<br>2-Z/E<br>GLT-1 |
|------------------------|------------------------|------------------|----------------|----------------|------------------|-----|-------|----------------------|-------------------------|
| <b>Rp</b> 1/16         | 7,72                   | 28               | 90             | 10             | 6                | 4,9 | 6,55  | C0513500.4091        | C051C400.4091           |
| 1/8                    | 9,73                   | 28               | 90             | 10             | 7                | 5,5 | 8,6   | <b>C0513500.4092</b> | <b>C051C400.4092</b>    |
| 1/4                    | 13,16                  | 19               | 100            | 15             | 11               | 9   | 11,5  | <b>C0513500.4093</b> | <b>C051C400.4093</b>    |
| 3/8                    | 16,66                  | 19               | 100            | 15             | 12               | 9   | 15    | <b>C0513500.4094</b> | <b>C051C400.4094</b>    |
| 1/2                    | 20,96                  | 14               | 125            | 17             | 16               | 12  | 18,5  | <b>C0513500.4095</b> | <b>C051C400.4095</b>    |
| 3/4                    | 26,44                  | 14               | 140            | 20             | 20               | 16  | 24    | <b>C0513500.4096</b> | C051C400.4096           |
| 1"                     | 33,25                  | 11               | 160            | 24             | 25               | 20  | 30,25 | <b>C0513500.4097</b> | C051C400.4097           |

Zugehöriges Außengewinde ist kegelig, siehe Schneideisen Seite 535  
The appropriate external thread is tapered, see dies, page 535

**Rp (BSPP)**

DIN EN 10226-1, ISO 7-1

≈ DIN  
352Für dünnwandige Messing-Rohre  
For thin-walled brass tubesTechnische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

» 78

| Nenngröße<br>Nom. size | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |       | AUT-A<br>MS-R | AUT-A<br>MS-R |
|------------------------|------------------------|------------------|----------------|----------------|------------------|------|-------|---------------|---------------|
| <b>Rp</b> 1/8          | 9,73                   | 28               | 63             | 18             | 7                | 5,5  | 8,6   | A6622501.4092 | A6622531.4092 |
| 1/4                    | 13,16                  | 19               | 70             | 20             | 10 <sup>1)</sup> | 8    | 11,5  | A6622501.4093 | A6622531.4093 |
| 3/8                    | 16,66                  | 19               | 70             | 20             | 12               | 9    | 15    | A6622501.4094 | A6622531.4094 |
| 1/2                    | 20,96                  | 14               | 80             | 22             | 15 <sup>1)</sup> | 12   | 18,5  | A6622501.4095 | A6622531.4095 |
| 3/4                    | 26,44                  | 14               | 90             | 22             | 18 <sup>1)</sup> | 14,5 | 24    | A6622501.4096 | A6622531.4096 |
| 1"                     | 33,25                  | 11               | 100            | 25             | 18 <sup>1)</sup> | 14,5 | 30,25 | A6622501.4097 | A6622531.4097 |

Zugehöriges Außengewinde ist kegelig, siehe Schneideisen Seite 535  
The appropriate external thread is tapered, see dies, page 535

1) Spezieller AUT-Schaft

Special shank for "AUT" taps

2) Vorbohrdurchmesser für Gewindebohrer mit Übermaß um 0,05 mm anheben

Increase drill diameter for taps with oversize by 0.05 mm

**MS**  
Copper-zinc  
alloys

„X“

„X“ +0,05 2)

HSSE

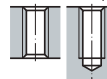
HSSE

max. 1

max. 1

E

E

max. 1 x d<sub>1</sub>**N** 2.3, 2.6**N** 2.3, 2.6

Product

Finder

V<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

**G, Rp**

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

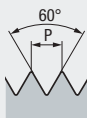
Zubehör

Accessories

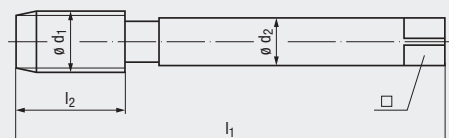


# NPSM

ANSI B1.20.1



≈ DIN  
5156



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| Nenngröße<br>Nom. size |                        |                  |                |                |                  |     | NPSM |      | Rekord<br>2A-STEEL | Enorm<br>2-Z/E | Enorm<br>2-Z/E<br>GLT-1 |
|------------------------|------------------------|------------------|----------------|----------------|------------------|-----|------|------|--------------------|----------------|-------------------------|
| Ø d <sub>1</sub>       | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □   | NPSM | NPSC |                    |                |                         |
| 1/8                    | 10,100                 | 27               | 90             | 18             | 7                | 5,5 | 9,1  | 8,8  | C0101001.5858      | C0513500.5858  | C051C400.5858           |
| 1/4                    | 13,404                 | 18               | 100            | 22             | 11               | 9   | 12   | 11,4 | C0101001.5859      | C0513500.5859  | C051C400.5859           |
| 3/8                    | 16,843                 | 18               | 100            | 22             | 12               | 9   | 15,5 | 14,9 | C0101001.5860      | C0513500.5860  | C051C400.5860           |
| 1/2                    | 20,949                 | 14               | 125            | 25             | 16               | 12  | 19   | 18,4 | C0101001.5861      | C0513500.5861  | C051C400.5861           |
| 3/4                    | 26,296                 | 14               | 140            | 28             | 20               | 16  | 24,5 | 23,7 | C0101001.5862      | C0513500.5862  | C051C400.5862           |
| 1"                     | 32,895                 | 11 1/2           | 160            | 30             | 25               | 20  | 30,5 | 29,8 | C0101001.5863      | C0513500.5863  | C051C400.5863           |

NPSM auch für NPSC verwendbar  
NPSM can also be used for NPSC thread

STEEL  
Steel  
materials



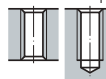
„X“

HSSE

C / 2-3

E / 0

max. 2 x d<sub>1</sub>



**K** 1.1-4.2  
**N** 2.3

**Z**  
CNC-controlled  
machines



l<sub>2</sub> ≈ 10 x P



new



l<sub>2</sub> ≈ 10 x P

HSSE

R45

E / 1,5-2

E / 0 / P

max. 3 x d<sub>1</sub>



**P** 1.1-3.1

**P** 1.1-4.1

**M** 1.1-4.1

**N** 1.4, 2.1-2.2

**N** 2.4-2.5

**S** 1.1

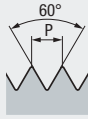
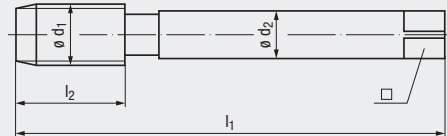


Kühlschmierstoffe siehe Seite 300 - 301

Coolant-lubricants, see page 300 - 301

**NPSF**

ANSI B1.20.3

≈ DIN  
5156Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

» 78

| Nenngröße<br>Nom. size<br>ø d <sub>1</sub> | ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □   |       |
|--------------------------------------------|------------------------|------------------|----------------|----------------|------------------|-----|-------|
| 1/16                                       | 7,582                  | 27               | 90             | 17             | 6                | 4,9 | 6,35  |
| 1/8                                        | 9,929                  | 27               | 90             | 18             | 7                | 5,5 | 8,7   |
| 1/4                                        | 13,236                 | 18               | 100            | 22             | 11               | 9   | 11,3  |
| 3/8                                        | 16,673                 | 18               | 100            | 22             | 12               | 9   | 14,75 |
| 1/2                                        | 20,819                 | 14               | 125            | 25             | 16               | 12  | 18,2  |
| 3/4                                        | 26,166                 | 14               | 140            | 28             | 20               | 16  | 23,5  |
| 1"                                         | 32,718                 | 11 1/2           | 160            | 30             | 25               | 20  | 29,5  |

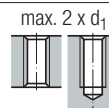
**STEEL**  
Steel  
materials

„X“

HSSE

C / 2-3

E / 0

**K** 1.1-4.2  
**N** 2.3**Rekord**  
**2A-STEEL**C0101001.5904  
C0101001.5905  
C0101001.5906  
C0101001.5907  
C0101001.5908  
C0101001.5909  
C0101001.5910**Z**  
CNC-controlled  
machines**new**l<sub>2</sub> ≈ 10 x Pl<sub>2</sub> ≈ 10 x P

HSSE

R45

E / 1,5-2

E / 0 / P

**P** 1.1-3.1**Enorm**  
**2-Z/E**C0513500.5904  
C0513500.5905  
C0513500.5906  
C0513500.5907  
C0513500.5908  
C0513500.5909  
C0513500.5910

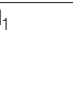
GLT-1

HSSE

R45

E / 1,5-2

E / 0 / P

**P** 1.1-4.1**M** 1.1-4.1**N** 1.4, 2.1-2.2**N** 2.4-2.5**S** 1.1**Enorm**  
**2-Z/E**  
**GLT-1**C051C400.5904  
C051C400.5905  
C051C400.5906  
C051C400.5907  
C051C400.5908  
C051C400.5909  
C051C400.5910Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, **NPSF**NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

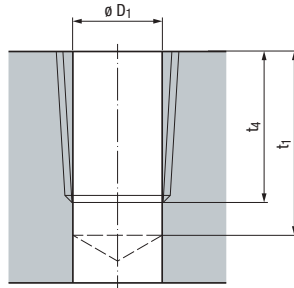


# NPT

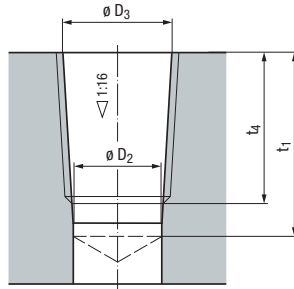
ANSI/ASME B1.20.1



a) Zylindrisch vorarbeiten  
Cylindrical preparation of thread hole

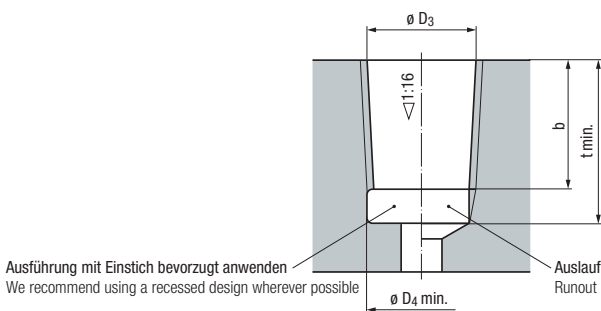


b) Kegelig vorarbeiten  
Tapered preparation of thread hole



1) Die Vorbohrtiefe  $t_1$  berücksichtigt die Längen  $L_1$  und  $L_3$  nach ASME-Norm, sowie die Anschnittlänge des Gewindebohrers und 1 bis 2 Gewindegänge Sicherheit.  
Tiefbohren ist erforderlich, wenn Gewindebohrer mit Maximal-Gewindelängen nach ASME B94.9 angewendet werden sollen.  
The drill depth  $t_1$  takes into account the lengths  $L_1$  and  $L_3$  acc. ASME standards, the chamfer length of the tap and 1-2 threads safety margin.  
Deep drilling is necessary whenever taps with maximum thread length acc. ASME B94.9 are to be used.

c) Vorarbeiten von Grundlöchern  
Preparation of blind holes



2) Die Kernlochmaße sind auf Minimallängen nach ASME-Norm aufgebaut. Für Grundlöcher, welche die angegebenen Mindestdiefen  $t$  nicht zulassen, sind Sondergewindebohrer erforderlich. Eine bemaßte Grundlochskeze ist zur Beurteilung notwendig.  
The thread hole dimensions are based on minimal lengths acc. ASME standards. For blind holes which do not permit the indicated minimal depth  $t$ , special taps are necessary. A thread hole sketch with full dimensional specifications is necessary for making a decision.

EMUGE NPT-Gewindebohrer sind für die Lochformen a) bis c) geeignet.  
Für Gewinde mit höheren Anforderungen, z.B. NPT-Gewinde für die Luftfahrt, empfehlen wir, das Kernloch nach Form b) bzw. c) auszuführen.

EMUGE NPT taps are suited for the hole forms a) to c).  
For threads with higher demands, e.g. NPT threads for the aircraft industry, we recommend preparing the thread hole to form b), resp. c).

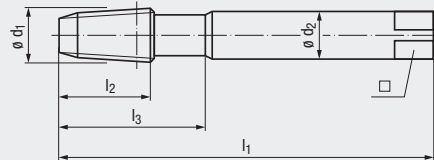
| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing D_1$ | $t_1$ 1) | $t_4$ |
|---------------------------------------------|------------------|-------------------|----------|-------|
| 1/16                                        | 27               | 6,15              | 11,8     | 9,70  |
| 1/8                                         | 27               | 8,50              | 11,9     | 9,75  |
| 1/4                                         | 18               | 11,00             | 17,4     | 14,25 |
| 3/8                                         | 18               | 14,40             | 17,7     | 14,55 |
| 1/2                                         | 14               | 17,80             | 23,1     | 19,00 |
| 3/4                                         | 14               | 23,15             | 23,6     | 19,50 |
| 1"                                          | 11 1/2           | 29,05             | 28,4     | 23,40 |
| 1 1/4                                       | 11 1/2           | 37,80             | 28,9     | 23,90 |
| 1 1/2                                       | 11 1/2           | 43,85             | 28,9     | 23,90 |
| 2"                                          | 11 1/2           | 55,85             | 29,3     | 24,35 |

| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing D_2$ | $\varnothing D_3$<br>+0,05 | $t_1$ 1) | $t_4$ |
|---------------------------------------------|------------------|-------------------|----------------------------|----------|-------|
| 1/16                                        | 27               | 5,95              | 6,39                       | 11,8     | 9,70  |
| 1/8                                         | 27               | 8,30              | 8,74                       | 11,9     | 9,75  |
| 1/4                                         | 18               | 10,75             | 11,36                      | 17,4     | 14,25 |
| 3/8                                         | 18               | 14,15             | 14,80                      | 17,7     | 14,55 |
| 1/2                                         | 14               | 17,45             | 18,32                      | 23,1     | 19,00 |
| 3/4                                         | 14               | 22,80             | 23,67                      | 23,6     | 19,50 |
| 1"                                          | 11 1/2           | 28,65             | 29,69                      | 28,4     | 23,40 |
| 1 1/4                                       | 11 1/2           | 37,35             | 38,45                      | 28,9     | 23,90 |
| 1 1/2                                       | 11 1/2           | 43,45             | 44,52                      | 28,9     | 23,90 |
| 2"                                          | 11 1/2           | 55,45             | 56,56                      | 29,3     | 24,35 |

| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing D_3$<br>+0,05 | b    | t<br>min. 2) | $\varnothing D_4$<br>min. |
|---------------------------------------------|------------------|----------------------------|------|--------------|---------------------------|
| 1/16                                        | 27               | 6,39                       | 7,0  | 10,0         | 7,6                       |
| 1/8                                         | 27               | 8,74                       | 7,0  | 10,0         | 10,0                      |
| 1/4                                         | 18               | 11,36                      | 10,2 | 14,5         | 13,1                      |
| 3/8                                         | 18               | 14,80                      | 10,6 | 15,0         | 16,5                      |
| 1/2                                         | 14               | 18,32                      | 13,8 | 19,0         | 20,5                      |
| 3/4                                         | 14               | 23,67                      | 14,2 | 20,0         | 25,8                      |
| 1"                                          | 11 1/2           | 29,69                      | 17,0 | 24,0         | 32,2                      |
| 1 1/4                                       | 11 1/2           | 38,45                      | 17,5 | 24,5         | 41,0                      |
| 1 1/2                                       | 11 1/2           | 44,52                      | 17,5 | 24,5         | 47,2                      |
| 2"                                          | 11 1/2           | 56,56                      | 18,0 | 25,0         | 59,2                      |

**NPT**

ANSI/ASME B1.20.1

≈ DIN  
371Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialEinsatzgebiete – Material  
Applications – material

» 78

| Nenngröße<br>Nom. size                                                                         |                  |                |                |                |                  |      | Rekord<br>1-KEG-STEEL                                                                   |  | Rekord<br>1-KEG-VA                                                                      | Rekord<br>1-KEG-VA-AZ                                                                   |
|------------------------------------------------------------------------------------------------|------------------|----------------|----------------|----------------|------------------|------|-----------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Ø d <sub>1</sub>                                                                               | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □    |                                                                                         |  |                                                                                         |                                                                                         |
| 1/16                                                                                           | 27               | 90             | 12             | 26             | 8                | 6,2  | B0181000.5763                                                                           |  | B0183000.5763                                                                           | B0193000.5763                                                                           |
| 1/8                                                                                            | 27               | 90             | 12             | 26             | 10               | 8    | B0181000.5764                                                                           |  | B0183000.5764                                                                           | B0193000.5764                                                                           |
| 1/4                                                                                            | 18               | 100            | 18             | 34,5           | 14               | 11   | B0181000.5765                                                                           |  | B0183000.5765                                                                           | B0193000.5765                                                                           |
| 3/8                                                                                            | 18               | 110            | 18             | 37,5           | 18               | 14,5 |                                                                                         |  |                                                                                         |                                                                                         |
| 1/2                                                                                            | 14               | 140            | 23             | 45             | 22               | 18   |                                                                                         |  |                                                                                         |                                                                                         |
| ≈ DIN 374   |                  |                |                |                |                  |      |  251 |  |  251 |  251 |
| ≈ DIN 2181  |                  |                |                |                |                  |      |  253 |  |                                                                                         |                                                                                         |

Gewindekernloch-Vorfertigungsdurchmesser für NPT-Gewinde siehe Seite 248  
Thread hole preparatory diameters for NPT threads, see page 248Kegelige Gewindebohrer mit langer Gewindelänge nach ANSI B94.9 auf Anfrage  
Tapered taps with long thread length acc. ANSI B94.9 upon requestKegelreibahlen 1:16 für kegelige Gewinde  
Taper reamers 1:16 for tapered threads

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**STEEL**  
Steel  
materials

HSSE

C / 2-3

E / O

P 3.1  
K 1.1-1.2  
N 2.3**VA**  
Stainless steel  
materials

HSSE

C / 2-3

E / O / P

P 2.1-4.1  
K 2.1-4.2  
N 1.5, 2.6

HSSE

C / 2-3

E / O / P

P 2.1-4.1  
K 2.1-4.2  
N 1.5, 2.6Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

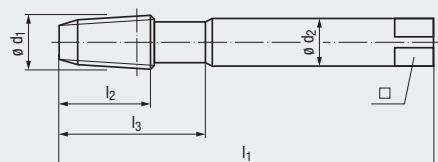
Tr, Tr-F  
RdZubehör  
Accessories

|                           |
|---------------------------|
| Product Finder            |
| V <sub>c</sub>            |
| M                         |
| MF                        |
| UNC<br>UN-8               |
| UNF<br>UNEF               |
| G, Rp<br>NPSM, NPSF       |
| <b>NPT, NPTF</b><br>Rc, W |
| BSW, BSF                  |
| Pg                        |
| MJ<br>UNJC, UNJF          |
| EG (STI)                  |
| SELF-LOCK                 |
| Tr, Tr-F<br>Rd            |
| Zubehör<br>Accessories    |



ANSI/ASME B1.20.1

≈ DIN 371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Einsatzgebiete – Material  
Applications – material

» 78

VA  
Stainless steel  
materials



NI  
Nickel  
alloys



HSSE  
R35  
C / 2-3  
E / O / P

HSSE  
R35  
C / 2-3  
E / O / P

TICN  
HSSE-PM  
R10  
C / 2-3  
O / P

P 1.1-3.1  
M 1.1-3.1

P 1.1-3.1  
M 1.1-3.1

N 2.8  
S 2.3, 2.5-2.6

| Nenngröße<br>Nom. size | P           |                |                |                |                  |      |               | Rekord<br>1-KEG-R35-VA | Rekord<br>1-KEG-R35-VA-AZ | Rekord<br>1-KEG-R10-NI<br>PM-TICN |
|------------------------|-------------|----------------|----------------|----------------|------------------|------|---------------|------------------------|---------------------------|-----------------------------------|
| Ø d <sub>1</sub>       | Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □    |               |                        |                           |                                   |
| 1/16                   | 27          | 90             | 12             | 26             | 8                | 6,2  | B1583000.5763 | B1593000.5763          |                           |                                   |
| 1/8                    | 27          | 90             | 12             | 26             | 10               | 8    | B1583000.5764 | B1593000.5764          |                           | B670J400.5764                     |
| 1/4                    | 18          | 100            | 18             | 34,5           | 14               | 11   | B1583000.5765 | B1593000.5765          |                           | B670J400.5765                     |
| 3/8                    | 18          | 110            | 18             | 37,5           | 18               | 14,5 |               |                        |                           | B670J400.5766                     |
| 1/2                    | 14          | 140            | 23             | 45             | 22               | 18   |               |                        |                           | B670J400.5767                     |
| ≈ DIN 374              |             |                |                |                |                  |      | » 252         | » 252                  |                           |                                   |
| ≈ DIN 2181             |             |                |                |                |                  |      |               |                        |                           |                                   |

Gewindekernloch-Vorfertigungsdurchmesser für NPT-Gewinde siehe Seite 248  
Thread hole preparatory diameters for NPT threads, see page 248

Kegelige Gewindebohrer mit langer Gewindelänge nach ANSI B94.9 auf Anfrage  
Tapered taps with long thread length acc. ANSI B94.9 upon request

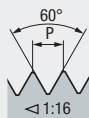
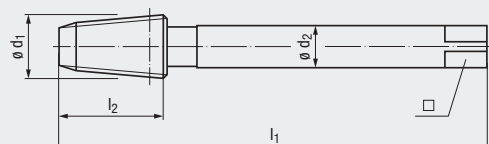


Kegelreibahlen 1:16 für kegelige Gewinde  
Taper reamers 1:16 for tapered threads

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**NPT**

ANSI/ASME B1.20.1

≈ DIN  
374Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialEinsatzgebiete – Material  
Applications – material

» 78

| Nenngröße<br>Nom. size<br>Ø d <sub>1</sub> | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □  | Rekord<br>2-KEG-STEEL | Rekord<br>2-KEG-VA | Rekord<br>2-KEG-VA-AZ |
|--------------------------------------------|------------------|----------------|----------------|------------------|----|-----------------------|--------------------|-----------------------|
| 3/8                                        | 18               | 110            | 18             | 14               | 11 | C0181000.5766         | C0183000.5766      | C0193000.5766         |
| 1/2                                        | 14               | 140            | 23             | 16               | 12 | C0181000.5767         | C0183000.5767      | C0193000.5767         |
| 3/4                                        | 14               | 150            | 24             | 20               | 16 | C0181000.5768         | C0183000.5768      | C0193000.5768         |
| 1"                                         | 11 1/2           | 170            | 30             | 25               | 20 | C0181000.5769         | C0183000.5769      | C0193000.5769         |
| 1 1/4                                      | 11 1/2           | 190            | 32             | 32               | 24 | C0181000.5770         |                    |                       |
| 1 1/2                                      | 11 1/2           | 200            | 32             | 36               | 29 | C0181000.5771         |                    |                       |
| 2"                                         | 11 1/2           | 220            | 34             | 45               | 35 | C0181000.5772         |                    |                       |
| ≈ DIN 371                                  |                  |                |                |                  |    | » 249                 | » 249              | » 249                 |
| ≈ DIN 2181                                 |                  |                |                |                  |    | » 253                 |                    |                       |

Gewindekernloch-Vorfertigungsdurchmesser für NPT-Gewinde siehe Seite 248  
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Tapered taps with long thread length acc. ANSI B94.9 upon requestKegelreibahlen 1:16 für kegelige Gewinde  
Taper reamers 1:16 for tapered threads

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**STEEL**  
Steel  
materials

HSSE

C / 2-3

E / O

**P** 3.1  
**K** 1.1-1.2  
**N** 2.3
**VA**  
Stainless steel  
materials

HSSE

C / 2-3

E / O / P

**P** 2.1-4.1  
**K** 2.1-4.2  
**N** 1.5, 2.6

**P** 2.1-4.1  
**K** 2.1-4.2  
**N** 1.5, 2.6
Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSF**NPT** NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

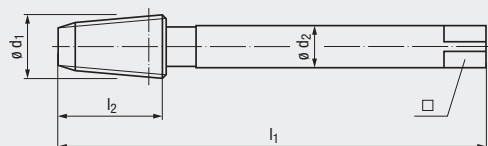
Tr, Tr-F  
RdZubehör  
Accessories

|                           |
|---------------------------|
| Product Finder            |
| V <sub>c</sub>            |
| M                         |
| MF                        |
| UNC<br>UN-8               |
| UNF<br>UNEF               |
| G, Rp<br>NPSM, NPSF       |
| <b>NPT, NPTF</b><br>Rc, W |
| BSW, BSF                  |
| Pg                        |
| MJ<br>UNJC, UNJF          |
| EG (STI)                  |
| SELF-LOCK                 |
| Tr, Tr-F<br>Rd            |
| Zubehör<br>Accessories    |



ANSI/ASME B1.20.1

≈ DIN 374



VA  
Stainless steel materials



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



HSSE  
R35  
C / 2-3  
E / O / P

HSSE  
R35  
C / 2-3  
E / O / P

Einsatzgebiete – Material  
Applications – material

» 78

P 1.1-3.1  
M 1.1-3.1

P 1.1-3.1  
M 1.1-3.1

Nenngröße  
Nom. size

P  
Gg/1" (tpi)

Ø d<sub>1</sub>

l<sub>1</sub>

l<sub>2</sub>

Ø d<sub>2</sub>

□

|       |        |     |    |    |    |
|-------|--------|-----|----|----|----|
| 3/8   | 18     | 110 | 18 | 14 | 11 |
| 1/2   | 14     | 140 | 23 | 16 | 12 |
| 3/4   | 14     | 150 | 24 | 20 | 16 |
| 1"    | 11 1/2 | 170 | 30 | 25 | 20 |
| 1 1/4 | 11 1/2 | 190 | 32 | 32 | 24 |
| 1 1/2 | 11 1/2 | 200 | 32 | 36 | 29 |
| 2"    | 11 1/2 | 220 | 34 | 45 | 35 |

Rekord  
2-KEG-R35-VA

Rekord  
2-KEG-R35-VA-AZ

C1583000.5766  
C1583000.5767  
C1583000.5768  
C1583000.5769  
C1583000.5770  
C1583000.5771  
C1583000.5772

C1593000.5766  
C1593000.5767  
C1593000.5768  
C1593000.5769  
C1593000.5770  
C1593000.5771  
C1593000.5772

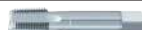
≈ DIN 371



» 250

» 250

≈ DIN 2181



Gewindekernloch-Vorfertigungsdurchmesser für NPT-Gewinde siehe Seite 248  
Thread hole preparatory diameters for NPT threads, see page 248

Kegelige Gewindebohrer mit langer Gewindelänge nach ANSI B94.9 auf Anfrage  
Tapered taps with long thread length acc. ANSI B94.9 upon request

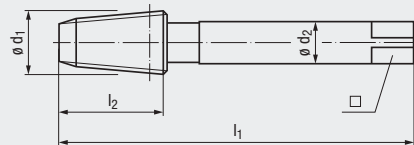


Kegelreibahlen 1:16 für kegelige Gewinde  
Taper reamers 1:16 for tapered threads

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**NPT**

ANSI/ASME B1.20.1

≈ DIN  
2181Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialEinsatzgebiete – Material  
Applications – material

» 78

Nenngröße

Nom. size

P

Gg/1" (tpi)

 $l_1$  $l_2$  $\varnothing d_2$  $\square$ 

|       |        |     |    |    |     |
|-------|--------|-----|----|----|-----|
| 1/16  | 27     | 63  | 12 | 6  | 4,9 |
| 1/8   | 27     | 63  | 12 | 7  | 5,5 |
| 1/4   | 18     | 63  | 18 | 11 | 9   |
| 3/8   | 18     | 70  | 18 | 12 | 9   |
| 1/2   | 14     | 80  | 23 | 16 | 12  |
| 3/4   | 14     | 100 | 24 | 20 | 16  |
| 1"    | 11 1/2 | 110 | 30 | 25 | 20  |
| 1 1/4 | 11 1/2 | 125 | 32 | 32 | 24  |
| 1 1/2 | 11 1/2 | 140 | 32 | 36 | 29  |
| 2"    | 11 1/2 | 160 | 34 | 45 | 35  |

≈ DIN 371



≈ DIN 374

**STEEL**  
Steel  
materials

HSSE

HSSE

C / 2-3

C / 2-3

E / O

E / O

**P****3.1****K****1.1-1.2****N****2.3****P****3.1****K****1.1-1.2****N****2.3****Rekord**  
**KEG-STEEL****Rekord**  
**KEG-STEEL-AZ****A0181000.5763****A0191000.5763****A0181000.5764****A0191000.5764****A0181000.5765****A0191000.5765****A0181000.5766****A0191000.5766****A0181000.5767****A0191000.5767****A0181000.5768****A0191000.5768****A0181000.5769****A0191000.5769****A0181000.5770****A0191000.5770****A0181000.5771****A0191000.5771****A0181000.5772****A0191000.5772**Gewindekernloch-Vorfertigungsdurchmesser für NPT-Gewinde siehe Seite 248  
Thread hole preparatory diameters for NPT threads, see page 248Kegelige Gewindebohrer mit langer Gewindelänge nach ANSI B94.9 auf Anfrage  
Tapered taps with long thread length acc. ANSI B94.9 upon requestKegelreibahlen 1:16 für kegelige Gewinde  
Taper reamers 1:16 for tapered threads

» 265

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

**NPT** NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

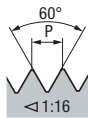
Zubehör

Accessories

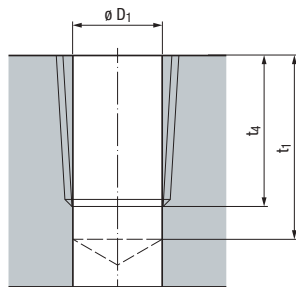


# NPTF

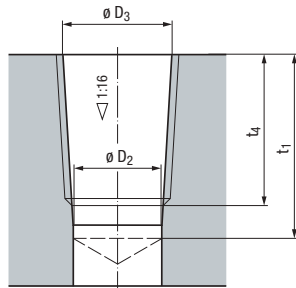
ANSI B1.20.3



a) Zylindrisch vorarbeiten  
Cylindrical preparation of thread hole

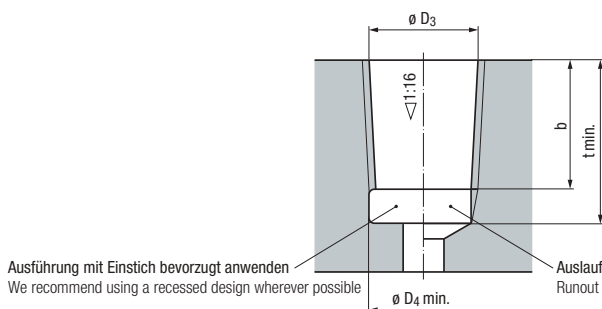


b) Kegelig vorarbeiten  
Tapered preparation of thread hole



1) Die Vorbohrtiefe  $t_1$  berücksichtigt die Längen  $L_1$  und  $L_3$  nach ASME-Norm, sowie die Anschnittlänge des Gewindebohrers und 1 bis 2 Gewindegänge Sicherheit.  
Tiefbohren ist erforderlich, wenn Gewindebohrer mit Maximal-Gewindelängen nach ASME B94.9 angewendet werden sollen.  
The drill depth  $t_1$  takes into account the lengths  $L_1$  and  $L_3$  acc. ASME standards, the chamfer length of the tap and 1-2 threads safety margin.  
Deep drilling is necessary whenever taps with maximum thread length acc. ASME B94.9 are to be used.

c) Vorarbeiten von Grundlöchern  
Preparation of blind holes



2) Die Kernlochmaße sind auf Minimallängen nach ASME-Norm aufgebaut. Für Grundlöcher, welche die angegebenen Mindesttiefen  $t$  nicht zulassen, sind Sondergewindebohrer erforderlich. Eine bemaßte Grundlochskizze ist zur Beurteilung notwendig.  
The thread hole dimensions are based on minimal lengths acc. ASME standards. For blind holes which do not permit the indicated minimal depth  $t$ , special taps are necessary. A thread hole sketch with full dimensional specifications is necessary for making a decision.

EMUGE NPTF-Gewindebohrer sind für die Lochformen a) bis c) geeignet.  
Für Gewinde mit höheren Anforderungen, z.B. NPTF-Gewinde für die Luftfahrt, empfehlen wir, das Kernloch nach Form b) bzw. c) auszuführen.

EMUGE NPTF taps are suited for the hole forms a) to c).  
For threads with higher demands, e.g. NPTF threads for the aircraft industry, we recommend preparing the thread hole to form b), resp. c).

| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing D_1$ | $t_1$ 1) | $t_4$ |
|---------------------------------------------|------------------|-------------------|----------|-------|
| 1/16                                        | 27               | 6,10              | 13,0     | 10,65 |
| 1/8                                         | 27               | 8,45              | 13,0     | 10,70 |
| 1/4                                         | 18               | 10,90             | 19,2     | 15,65 |
| 3/8                                         | 18               | 14,30             | 19,5     | 16,00 |
| 1/2                                         | 14               | 17,60             | 25,4     | 20,85 |
| 3/4                                         | 14               | 23,00             | 25,9     | 21,30 |
| 1"                                          | 11 1/2           | 28,75             | 31,1     | 25,60 |
| 1 1/4                                       | 11 1/2           | 37,50             | 31,7     | 26,15 |
| 1 1/2                                       | 11 1/2           | 43,75             | 31,7     | 26,15 |
| 2"                                          | 11 1/2           | 55,75             | 32,1     | 26,55 |

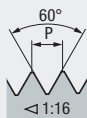
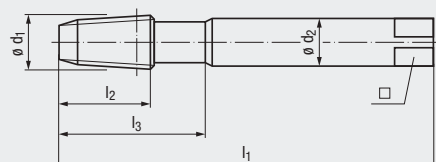
| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing D_2$ | $\varnothing D_3$<br>+0,05 | $t_1$ 1) | $t_4$ |
|---------------------------------------------|------------------|-------------------|----------------------------|----------|-------|
| 1/16                                        | 27               | 5,95              | 6,41                       | 13,0     | 10,65 |
| 1/8                                         | 27               | 8,30              | 8,76                       | 13,0     | 10,70 |
| 1/4                                         | 18               | 10,75             | 11,40                      | 19,2     | 15,65 |
| 3/8                                         | 18               | 14,15             | 14,84                      | 19,5     | 16,00 |
| 1/2                                         | 14               | 17,45             | 18,33                      | 25,4     | 20,85 |
| 3/4                                         | 14               | 22,80             | 23,68                      | 25,9     | 21,30 |
| 1"                                          | 11 1/2           | 28,65             | 29,72                      | 31,1     | 25,60 |
| 1 1/4                                       | 11 1/2           | 37,35             | 38,48                      | 31,7     | 26,15 |
| 1 1/2                                       | 11 1/2           | 43,45             | 44,55                      | 31,7     | 26,15 |
| 2"                                          | 11 1/2           | 55,45             | 56,59                      | 32,1     | 26,55 |

| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing D_3$<br>+0,05 | b    | t<br>min. 2) | $\varnothing D_4$<br>min. |
|---------------------------------------------|------------------|----------------------------|------|--------------|---------------------------|
| 1/16                                        | 27               | 6,41                       | 8,0  | 11,0         | 7,4                       |
| 1/8                                         | 27               | 8,76                       | 8,0  | 11,0         | 9,8                       |
| 1/4                                         | 18               | 11,40                      | 11,6 | 15,5         | 12,9                      |
| 3/8                                         | 18               | 14,84                      | 12,0 | 16,0         | 16,3                      |
| 1/2                                         | 14               | 18,33                      | 15,6 | 20,5         | 20,3                      |
| 3/4                                         | 14               | 23,68                      | 16,0 | 21,5         | 25,6                      |
| 1"                                          | 11 1/2           | 29,72                      | 19,2 | 26,0         | 32,0                      |
| 1 1/4                                       | 11 1/2           | 38,48                      | 19,7 | 26,5         | 40,8                      |
| 1 1/2                                       | 11 1/2           | 44,55                      | 19,7 | 26,5         | 47,0                      |
| 2"                                          | 11 1/2           | 56,59                      | 20,2 | 27,0         | 59,0                      |



**NPTF**

ANSI B1.20.3

≈ DIN  
371Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialEinsatzgebiete – Material  
Applications – material

» 78

| Nenngröße<br>Nom. size                                                                         |             |                |                |                |                  |      | Rekord<br>1-KEG-STEEL                                                                   |  | Rekord<br>1-KEG-VA                                                                      | Rekord<br>1-KEG-R35-VA                                                                  |
|------------------------------------------------------------------------------------------------|-------------|----------------|----------------|----------------|------------------|------|-----------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| P                                                                                              |             |                |                |                |                  |      |                                                                                         |  |                                                                                         |                                                                                         |
| Ø d <sub>1</sub>                                                                               | Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □    |                                                                                         |  |                                                                                         |                                                                                         |
| 1/16                                                                                           | 27          | 90             | 12             | 26             | 8                | 6,2  | B0181000.5782                                                                           |  | B0183000.5782                                                                           | B1583000.5782                                                                           |
| 1/8                                                                                            | 27          | 90             | 12             | 26             | 10               | 8    | B0181000.5783                                                                           |  | B0183000.5783                                                                           | B1583000.5783                                                                           |
| 1/4                                                                                            | 18          | 100            | 18             | 34,5           | 14               | 11   | B0181000.5784                                                                           |  | B0183000.5784                                                                           | B1583000.5784                                                                           |
| 3/8                                                                                            | 18          | 110            | 18             | 37,5           | 18               | 14,5 |                                                                                         |  |                                                                                         |                                                                                         |
| 1/2                                                                                            | 14          | 140            | 23             | 45             | 22               | 18   |                                                                                         |  |                                                                                         |                                                                                         |
| ≈ DIN 374   |             |                |                |                |                  |      |  257 |  |  257 |  257 |
| ≈ DIN 2181  |             |                |                |                |                  |      |  258 |  |                                                                                         |                                                                                         |

Gewindekernloch-Vorfertigungsdurchmesser für NPTF-Gewinde siehe Seite 254  
Thread hole preparatory diameters for NPTF threads, see page 254Kegelige Gewindebohrer mit langer Gewindelänge nach ANSI B94.9 auf Anfrage  
Tapered taps with long thread length acc. ANSI B94.9 upon requestKegelreibahlen 1:16 für kegelige Gewinde  
Taper reamers 1:16 for tapered threads

» 265

**STEEL**  
Steel  
materials

HSSE

C / 2-3

E / O

P 3.1  
K 1.1-1.2  
N 2.3**VA**  
Stainless steel  
materials

HSSE

C / 2-3

E / O / P

P 2.1-4.1  
K 2.1-4.2  
N 1.5, 2.6

HSSE

R35

C / 2-3

P 1.1-3.1  
M 1.1-3.1Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

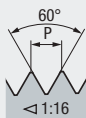
SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

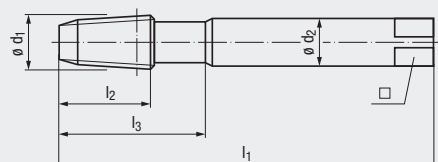
# NPTF

ANSI B1.20.3



≈ DIN  
371

NI  
Nickel  
alloys



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



TICN

HSSE-PM

R10

C / 2-3

O / P

Einsatzgebiete – Material  
Applications – material

» 78

N 2.8

S 2.3, 2.5-2.6

Nenngröße

Nom. size

P

Ø d<sub>1</sub>

Gg/1" (tpi)

l<sub>1</sub>

l<sub>2</sub>

l<sub>3</sub>

Ø d<sub>2</sub>

□

|      |    |     |    |      |    |      |
|------|----|-----|----|------|----|------|
| 1/16 | 27 | 90  | 12 | 26   | 8  | 6,2  |
| 1/8  | 27 | 90  | 12 | 26   | 10 | 8    |
| 1/4  | 18 | 100 | 18 | 34,5 | 14 | 11   |
| 3/8  | 18 | 110 | 18 | 37,5 | 18 | 14,5 |
| 1/2  | 14 | 140 | 23 | 45   | 22 | 18   |

Rekord  
1-KEG-R10-NI  
PM-TICN

B670J400.5783  
B670J400.5784  
B670J400.5785  
B670J400.5786

Gewindekernloch-Vorfertigungsdurchmesser für NPTF-Gewinde siehe Seite 254  
Thread hole preparatory diameters for NPTF threads, see page 254

Kegelige Gewindebohrer mit langer Gewindelänge nach ANSI B94.9 auf Anfrage  
Tapered taps with long thread length acc. ANSI B94.9 upon request

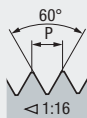
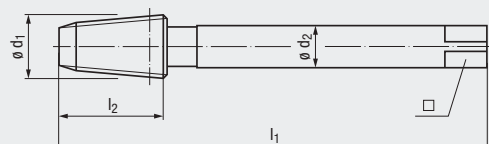


Kegelreibahlen 1:16 für kegelige Gewinde  
Taper reamers 1:16 for tapered threads

» 265

**NPTF**

ANSI B1.20.3

≈ DIN  
374Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialEinsatzgebiete – Material  
Applications – material

» 78

Nenngröße  
Nom. size  
 $\varnothing d_1$ P  
Gg/1" (tpi) $l_1$  $l_2$  $\varnothing d_2$  $\square$ 

|       |        |     |    |    |    |
|-------|--------|-----|----|----|----|
| 3/8   | 18     | 110 | 18 | 14 | 11 |
| 1/2   | 14     | 140 | 23 | 16 | 12 |
| 3/4   | 14     | 150 | 24 | 20 | 16 |
| 1"    | 11 1/2 | 170 | 30 | 25 | 20 |
| 1 1/4 | 11 1/2 | 190 | 32 | 32 | 24 |
| 1 1/2 | 11 1/2 | 200 | 32 | 36 | 29 |
| 2"    | 11 1/2 | 220 | 34 | 45 | 35 |

≈ DIN 371



≈ DIN 2181

**STEEL**  
Steel  
materials

HSSE

C / 2-3

E / O

**P** 3.1  
**K** 1.1-1.2  
**N** 2.3
**Rekord**  
**2-KEG-STEEL**
**C0181000.5785**  
**C0181000.5786**  
**C0181000.5787**  
C0181000.5788  
C0181000.5789  
C0181000.5790  
C0181000.5791

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» 258

**VA**  
Stainless steel  
materials

HSSE

C / 2-3

E / O / P

**P** 2.1-4.1  
**K** 2.1-4.2  
**N** 1.5, 2.6
**Rekord**  
**2-KEG-VA**
**C0183000.5785**  
**C0183000.5786**  
**C0183000.5787**  
C0183000.5788

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**Rekord**  
**2-KEG-R35-VA**
**C1583000.5785**  
**C1583000.5786**  
**C1583000.5787**  
C1583000.5788  
C1583000.5789  
C1583000.5790  
C1583000.5791

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Gewindekernloch-Vorfertigungsdurchmesser für NPTF-Gewinde siehe Seite 254  
Thread hole preparatory diameters for NPTF threads, see page 254Kegelige Gewindebohrer mit langer Gewindelänge nach ANSI B94.9 auf Anfrage  
Tapered taps with long thread length acc. ANSI B94.9 upon requestKegelreibahlen 1:16 für kegelige Gewinde  
Taper reamers 1:16 for tapered threads

» 265

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSF**NPT, NPTF**  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

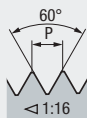
SELF-LOCK

Tr, Tr-F  
RdZubehör  
AccessoriesGewindefräser für kegelige Gewinde  
Typ GF-KEG siehe Seite 449 - 462Thread milling cutters for tapered threads  
type GF-KEG, see page 449 - 462

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

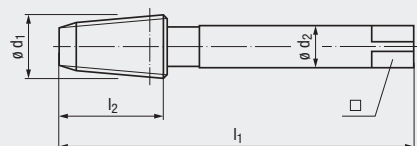
# NPTF

ANSI B1.20.3



≈ DIN  
2181

**STEEL**  
Steel  
materials



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

HSSE

C / 2-3

E / 0

Einsatzgebiete – Material  
Applications – material

» 78

**P** 3.1  
**K** 1.1-1.2  
**N** 2.3

Nenngröße  
Nom. size

P  
Gg/1" (tpi)

Ø d<sub>1</sub>

l<sub>1</sub>

l<sub>2</sub>

Ø d<sub>2</sub>

□

**Rekord  
KEG-STEEL**

|       |        |     |    |    |     |                      |
|-------|--------|-----|----|----|-----|----------------------|
| 1/16  | 27     | 63  | 12 | 6  | 4,9 | <b>A0181000.5782</b> |
| 1/8   | 27     | 63  | 12 | 7  | 5,5 | <b>A0181000.5783</b> |
| 1/4   | 18     | 63  | 18 | 11 | 9   | <b>A0181000.5784</b> |
| 3/8   | 18     | 70  | 18 | 12 | 9   | <b>A0181000.5785</b> |
| 1/2   | 14     | 80  | 23 | 16 | 12  | <b>A0181000.5786</b> |
| 3/4   | 14     | 100 | 24 | 20 | 16  | <b>A0181000.5787</b> |
| 1"    | 11 1/2 | 110 | 30 | 25 | 20  | A0181000.5788        |
| 1 1/4 | 11 1/2 | 125 | 32 | 32 | 24  | A0181000.5789        |
| 1 1/2 | 11 1/2 | 140 | 32 | 36 | 29  | A0181000.5790        |
| 2"    | 11 1/2 | 160 | 34 | 45 | 35  | A0181000.5791        |

≈ DIN 371



» 255

≈ DIN 374



» 257

Gewindekernloch-Vorfertigungsdurchmesser für NPTF-Gewinde siehe Seite 254  
Thread hole preparatory diameters for NPTF threads, see page 254

Kegelige Gewindebohrer mit langer Gewindelänge nach ANSI B94.9 auf Anfrage  
Tapered taps with long thread length acc. ANSI B94.9 upon request

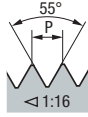


Kegelreibahlen 1:16 für kegelige Gewinde  
Taper reamers 1:16 for tapered threads

» 265

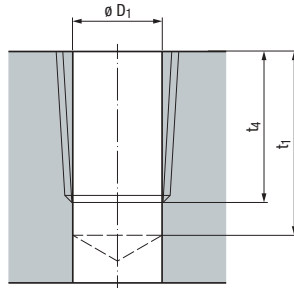
**Rc (BSPT)**

DIN EN 10226-2, ISO 7-1



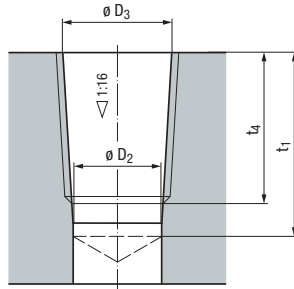
## a) Zylindrisch vorarbeiten

Cylindrical preparation of thread hole



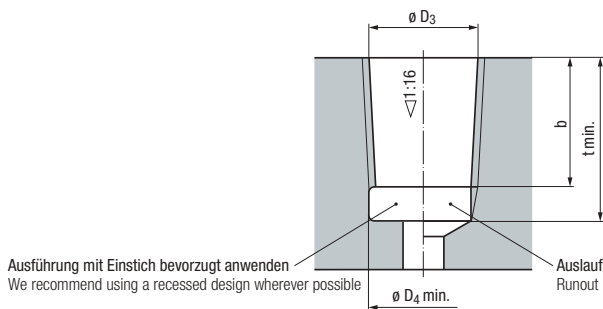
## b) Kegelig vorarbeiten

Tapered preparation of thread hole



## c) Vorarbeiten von Grundlöchern

Preparation of blind holes



2) Für Grundlöcher, welche die angegebenen Mindestdiefen  $t$  nicht zulassen, sind Sondergewindebohrer erforderlich.

Eine bemaßte Grundlochskizze ist zur Beurteilung notwendig.

For blind holes which do not permit the indicated minimal depth  $t$ , special taps are necessary.

A thread hole sketch with full dimensional specifications is necessary for making a decision.

EMUGE Rc-Gewindebohrer sind für die Lochformen a) bis c) geeignet. Die Lochform a) kann angewendet werden, wenn keine Dichtprobleme zu befürchten sind.

EMUGE Rc taps are suited for the hole forms a) to c).

Hole type a) can be used when there is no reason to worry about sealing problems.

| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing D_1$ | $t_1$ | $t_4$ |
|---------------------------------------------|------------------|-------------------|-------|-------|
| <b>Rc</b> 1/16                              | 28               | 6,15              | 11,1  | 9,5   |
| 1/8                                         | 28               | 8,15              | 11,1  | 9,5   |
| 1/4                                         | 19               | 10,85             | 16,3  | 14,0  |
| 3/8                                         | 19               | 14,30             | 16,7  | 14,4  |
| 1/2                                         | 14               | 17,80             | 22,3  | 19,1  |
| 3/4                                         | 14               | 23,20             | 23,6  | 20,4  |
| 1"                                          | 11               | 29,20             | 28,3  | 24,3  |

| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing D_2$ | $\varnothing D_3$<br>JS11 | $t_1$ | $t_4$ |
|---------------------------------------------|------------------|-------------------|---------------------------|-------|-------|
| <b>Rc</b> 1/16                              | 28               | 6,10              | 6,56                      | 11,1  | 9,5   |
| 1/8                                         | 28               | 8,10              | 8,57                      | 11,1  | 9,5   |
| 1/4                                         | 19               | 10,75             | 11,45                     | 16,3  | 14,0  |
| 3/8                                         | 19               | 14,25             | 14,95                     | 16,7  | 14,4  |
| 1/2                                         | 14               | 17,70             | 18,63                     | 22,3  | 19,1  |
| 3/4                                         | 14               | 23,10             | 24,12                     | 23,6  | 20,4  |
| 1"                                          | 11               | 29,10             | 30,29                     | 28,3  | 24,3  |

| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing D_3$<br>JS11 | b    | t<br>min. 2) | $\varnothing D_4$<br>min. |
|---------------------------------------------|------------------|---------------------------|------|--------------|---------------------------|
| <b>Rc</b> 1/16                              | 28               | 6,56                      | 5,6  | 9,9          | 7,6 +0,3                  |
| 1/8                                         | 28               | 8,57                      | 5,6  | 9,9          | 9,6 +0,3                  |
| 1/4                                         | 19               | 11,45                     | 8,4  | 14,6         | 13,0 +0,5                 |
| 3/8                                         | 19               | 14,95                     | 8,8  | 15,0         | 16,5 +0,5                 |
| 1/2                                         | 14               | 18,63                     | 11,4 | 20,0         | 20,6 +0,5                 |
| 3/4                                         | 14               | 24,12                     | 12,7 | 21,3         | 26,0 +0,5                 |
| 1"                                          | 11               | 30,29                     | 14,5 | 25,4         | 32,8 +0,5                 |

Product

Finder

V<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

Accessories



|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

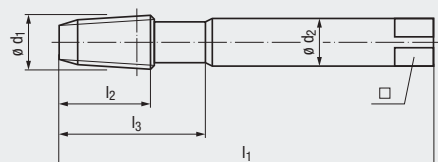
# Rc (BSPT)

DIN EN 10226-2, ISO 7-1



≈ DIN 371

VA  
Stainless steel  
materials



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

Technische Informationen  
Technical information



HSSE

C / 2-3

E / 0 / P

Einsatzgebiete – Material  
Applications – material

» 78

**P** 2.1-4.1  
**K** 2.1-4.2  
**N** 1.5, 2.6

Nenngröße

Nom. size

Ø d<sub>1</sub>

P

Gg/1" (tpi)

l<sub>1</sub>

l<sub>2</sub>

l<sub>3</sub>

Ø d<sub>2</sub>

□

|           |     |    |     |    |      |    |    |
|-----------|-----|----|-----|----|------|----|----|
| <b>Rc</b> | 1/8 | 28 | 90  | 12 | 26   | 10 | 8  |
|           | 1/4 | 19 | 100 | 18 | 34,5 | 14 | 11 |

≈ DIN 374



**Rekord  
1-KEG-VA**

**B0183000.4115**  
**B0183000.4116**

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Gewindekernloch-Vorfertigungsdurchmesser für Rc-Gewinde siehe Seite 259  
Thread hole preparatory diameters for Rc threads, see page 259



Kegelreibahlen 1:16 für kegelige Gewinde  
Taper reamers 1:16 for tapered threads

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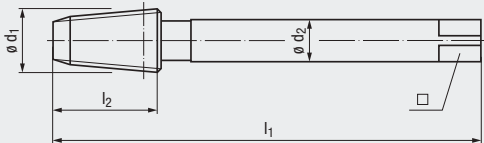
Rc (BSPT)

DIN EN 10226-2, ISO 7-1



≈ DIN 374

VA  
Stainless steel materials



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Einsatzgebiete – Material  
Applications – material

» 78

HSSE

C / 2-3

E / O / P

P 2.1-4.1

K 2.1-4.2

N 1.5, 2.6

| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $l_1$ | $l_2$ | $\varnothing d_2$ | $\square$ |
|---------------------------------------------|------------------|-------|-------|-------------------|-----------|
| Rc 1/4                                      | 19               | 100   | 18    | 11                | 9         |
| 3/8                                         | 19               | 110   | 18    | 14                | 11        |
| 1/2                                         | 14               | 140   | 23    | 16                | 12        |
| 3/4                                         | 14               | 150   | 24    | 20                | 16        |
| 1"                                          | 11               | 170   | 30    | 25                | 20        |

≈ DIN 371



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Rekord  
2-KEG-VA

C0183000.4116

C0183000.4117

C0183000.4118

C0183000.4119

C0183000.4120

Product  
Finder

V<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

Accessories



Gewindekernloch-Vorfertigungsdurchmesser für Rc-Gewinde siehe Seite 259  
Thread hole preparatory diameters for Rc threads, see page 259



Kegelreibahlen 1:16 für kegelige Gewinde  
Taper reamers 1:16 for tapered threads

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|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

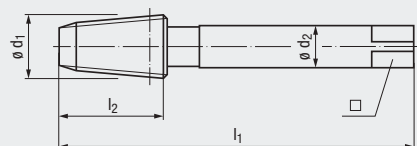
# Rc (BSPT)

DIN EN 10226-2, ISO 7-1



≈ DIN  
2181

**STEEL**  
Steel  
materials



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



HSSE

C / 2-3

E / 0

Einsatzgebiete – Material  
Applications – material

» 78

**P** 3.1

**K** 1.1-1.2

**N** 2.3

**Rekord  
KEG-STEEL**

| Nenngröße<br>Nom. size | P           |       |       |                   |           |                      |  |
|------------------------|-------------|-------|-------|-------------------|-----------|----------------------|--|
| $\varnothing d_1$      | Gg/1" (tpi) | $l_1$ | $l_2$ | $\varnothing d_2$ | $\square$ |                      |  |
| <b>Rc</b> 1/16         | 28          | 63    | 12    | 6                 | 4,9       | A0181000.4114        |  |
| 1/8                    | 28          | 63    | 12    | 7                 | 5,5       | <b>A0181000.4115</b> |  |
| 1/4                    | 19          | 63    | 18    | 11                | 9         | <b>A0181000.4116</b> |  |
| 3/8                    | 19          | 70    | 18    | 12                | 9         | <b>A0181000.4117</b> |  |
| 1/2                    | 14          | 80    | 23    | 16                | 12        | <b>A0181000.4118</b> |  |
| 3/4                    | 14          | 100   | 24    | 20                | 16        | <b>A0181000.4119</b> |  |
| 1"                     | 11          | 110   | 30    | 25                | 20        | <b>A0181000.4120</b> |  |

Gewindekernloch-Vorfertigungsdurchmesser für Rc-Gewinde siehe Seite 259  
Thread hole preparatory diameters for Rc threads, see page 259



Kegelreibahlen 1:16 für kegelige Gewinde  
Taper reamers 1:16 for tapered threads

» 265

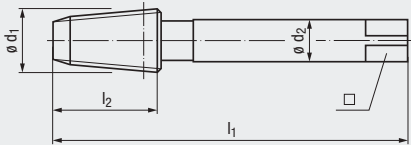


Gewindelehren für kegelige Gewinde  
siehe Seite 573 - 575

Thread gauges for tapered threads,  
see page 573 - 575

# W keg

DIN EN ISO 11363  
DIN 477 kegelig · tapered



STEEL  
Steel  
materials



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Einsatzgebiete – Material  
Applications – material

» 78

HSSE

C / 2-3

E / O

P 3.1

K 1.1-1.2

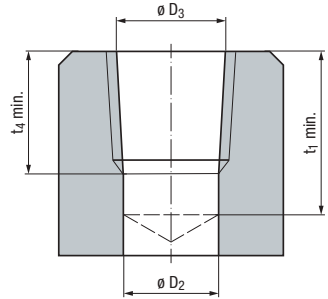
N 2.3

Rekord  
KEG-STEEL

A0181000.3286

A0181000.3287

Kegelig vorarbeiten  
Tapered preparation of the thread hole



| $\varnothing d_1$ | P<br>Gg/1" (tpi) | $l_1$ | $l_2$ | $\varnothing d_2$ | $\square$ |
|-------------------|------------------|-------|-------|-------------------|-----------|
| 17E / W 19,8      | 14               | 95    | 30    | 16                | 12        |
| 25E / W 28,8      | 14               | 100   | 35    | 22                | 18        |

| $\varnothing D_2$ | $\varnothing D_3$<br>$\pm 0,06$ | $t_1$<br>min. | $t_4$<br>min. |
|-------------------|---------------------------------|---------------|---------------|
| 14,6              | 16,82                           | 24,5          | 22,5          |
| 22,6              | 25,42                           | 29,5          | 27,5          |

Product  
Finder

$v_c$

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

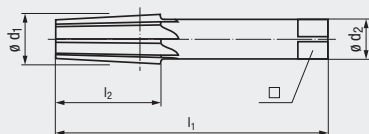
Tr, Tr-F  
Rd

Zubehör  
Accessories





Für konische Gewinde NPT, NPTF, Rc (BSPT), Kegel 1:16  
For tapered pipe threads NPT, NPTF, Rc (BSPT), taper 1:16



#### Technische Informationen Technical information

#### Schneidstoff · Cutting material

#### Nenngröße Nom. size

| $\emptyset d_1$ | $l_1$ | $l_2$ | $\emptyset d_2$ | $\square$ | Z<br>(Flutes) | KEG-RB<br>1:16<br>Form A | KEG-RB<br>1:16<br>Form B |  |  |
|-----------------|-------|-------|-----------------|-----------|---------------|--------------------------|--------------------------|--|--|
| 1/16            | 70    | 17    | 6               | 4,9       | 6             | G0037165.5763            | G0037175.5763            |  |  |
| 1/8             | 70    | 17    | 7               | 5,5       | 6             | G0037165.5764            | G0037175.5764            |  |  |
| 1/4             | 80    | 27    | 11              | 9         | 6             | G0037165.5765            | G0037175.5765            |  |  |
| 3/8             | 85    | 27    | 12              | 9         | 8             | G0037165.5766            | G0037175.5766            |  |  |
| 1/2             | 95    | 35    | 16              | 12        | 8             | G0037165.5767            | G0037175.5767            |  |  |
| 3/4             | 105   | 35    | 20              | 16        | 10            | G0037165.5768            | G0037175.5768            |  |  |
| 1"              | 130   | 43    | 25              | 20        | 10            | G0037165.5769            | G0037175.5769            |  |  |
| 1 1/4           | 140   | 44    | 32              | 24        | 12            | G0037165.5770            | G0037175.5770            |  |  |
| 1 1/2           | 150   | 45    | 36              | 29        | 12            | G0037165.5771            | G0037175.5771            |  |  |
| 2"              | 160   | 46    | 45              | 35        | 14            | G0037165.5772            | G0037175.5772            |  |  |

Achtung! Die Reibahlen sind ggf. durch Kürzung von vorne der aktuellen Lochtiefe anzupassen.  
Please note: If needed, the reamers can be fitted to the required hole depth by shortening the cutting part.

Product  
Finder $v_c$ 

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

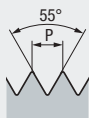
SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

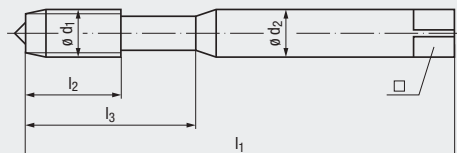
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# BSW

BS 84



≈ DIN 371



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

VA  
Stainless steel materials



Z  
CNC-controlled machines



new



new



med.  
GLT-1  
HSSE  
B / 4-5  
E / O / P

max. 3 x d<sub>1</sub>



med.  
HSSE  
R45  
C / 2-3  
E / O / P

max. 3 x d<sub>1</sub>



P 1.1-4.1  
M 1.1-4.1  
N 2.2

P 1.1-3.1

P 1.1-4.1  
M 1.1-4.1  
N 1.4, 2.1-2.2  
N 2.4-2.5  
S 1.1

|     | ø d <sub>1</sub><br>inch | ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □   |      |
|-----|--------------------------|------------------------|------------------|----------------|----------------|----------------|------------------|-----|------|
| BSW | 1/8                      | 3,18                   | 40               | 56             | 11             | 18             | 3,5              | 2,7 | 2,55 |
|     | 5/32                     | 3,97                   | 32               | 63             | 13             | 21             | 4,5              | 3,4 | 3,2  |
|     | 3/16                     | 4,76                   | 24               | 70             | 15             | 25             | 6                | 4,9 | 3,7  |
|     | 7/32                     | 5,56                   | 24               | 80             | 16             | 30             | 6                | 4,9 | 4,5  |
|     | 1/4                      | 6,35                   | 20               | 80             | 17             | 30             | 7                | 5,5 | 5,1  |
|     | 5/16                     | 7,94                   | 18               | 90             | 20             | 35             | 8                | 6,2 | 6,5  |
|     | 3/8                      | 9,53                   | 16               | 100            | 22             | 39             | 10               | 8   | 7,9  |

≈ DIN 376



Rekord  
1B-VA  
GLT-1

B020C300.3046  
B020C300.3047  
B020C300.3048  
B020C300.3049  
B020C300.3050  
B020C300.3051  
B020C300.3052

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Enorm  
1-Z

B0503500.3046  
B0503500.3047  
B0503500.3048  
B0503500.3049  
B0503500.3050  
B0503500.3051  
B0503500.3052

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Enorm  
1-Z  
GLT-1

B050C400.3046  
B050C400.3047  
B050C400.3048  
B050C400.3049  
B050C400.3050  
B050C400.3051  
B050C400.3052

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Schnellwechsel-Aufnahmen der  
Typenreihe SFM siehe Seite 699 - 704

Quick-change tap holders of our  
SFM series, see page 699 - 704

A diagram showing a cross-section of a V-shaped groove. The angle between the two sloped sides is labeled as  $55^\circ$ . The width of the groove at a certain depth is labeled as  $P$ .


$$b_2 \approx 10 \times P$$
 $\max. 2,5 \times d_1$ 

78

|   |         |
|---|---------|
| P | 1.1-3.1 |
| N | 2.2     |

|   |         |
|---|---------|
| P | 1.1-4.1 |
| M | 1.1-4.1 |
| N | 2.2     |

|     | ø d <sub>1</sub><br>inch | ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |  | Enorm<br>2-STEEL |  | Rekord<br>2B-VA<br>GLT-1 |  |
|-----|--------------------------|------------------------|------------------|----------------|----------------|------------------|------|-------------------------------------------------------------------------------------|------------------|--|--------------------------|--|
| BSW | 7/16                     | 11,11                  | 14               | 100            | 22             | 8                | 6,2  | 9,25                                                                                |                  |  | C020C300.3053            |  |
|     | 1/2                      | 12,70                  | 12               | 110            | 25             | 9                | 7    | 10,5                                                                                |                  |  | C020C300.3054            |  |
|     | 9/16                     | 14,29                  | 12               | 110            | 26             | 11               | 9    | 12                                                                                  |                  |  | C020C300.3055            |  |
|     | 5/8                      | 15,88                  | 11               | 110            | 27             | 12               | 9    | 13,5                                                                                |                  |  | C020C300.3056            |  |
|     | 3/4                      | 19,05                  | 10               | 125            | 30             | 14               | 11   | 16,4                                                                                |                  |  | C020C300.3058            |  |
|     | 7/8                      | 22,23                  | 9                | 140            | 32             | 18               | 14,5 | 19,25                                                                               |                  |  | C020C300.3060            |  |
|     | 1"                       | 25,40                  | 8                | 160            | 36             | 18               | 14,5 | 22                                                                                  |                  |  | C020C300.3062            |  |
|     | 1 1/8                    | 28,58                  | 7                | 180            | 40             | 22               | 18   | 24,75                                                                               |                  |  |                          |  |
|     | 1 1/4                    | 31,75                  | 7                | 180            | 40             | 22               | 18   | 27,75                                                                               | C0501000.3064    |  |                          |  |
|     | 1 3/8                    | 34,93                  | 6                | 200            | 50             | 28               | 22   | 30,5                                                                                | C0501000.3065    |  |                          |  |
|     | 1 1/2                    | 38,10                  | 6                | 200            | 50             | 28               | 22   | 33,5                                                                                | C0501000.3066    |  |                          |  |
|     | 1 3/4                    | 44,45                  | 5                | 220            | 58             | 36               | 29   | 39                                                                                  |                  |  |                          |  |
|     | 2"                       | 50,80                  | 4 1/2            | 250            | 65             | 40               | 32   | 44,5                                                                                | C0501000.3070    |  |                          |  |

≈ DIN 371

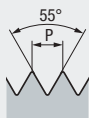
266



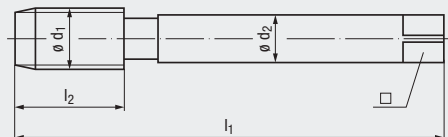
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# BSW

BS 84



≈ DIN 376



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

**Z**  
CNC-controlled machines



new



new



med.

HSSE

R45

C / 2-3

E / O / P

med.

GLT-1

HSSE

R45

C / 2-3

E / O / P

max. 3 x d<sub>1</sub>



**P** 1.1-3.1

**P** 1.1-4.1

**M** 1.1-4.1

**N** 1.4, 2.1-2.2

**N** 2.4-2.5

**S** 1.1

**Enorm 2-Z**

**Enorm 2-Z GLT-1**

|            | ø d <sub>1</sub><br>inch | ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |       |               |               |
|------------|--------------------------|------------------------|------------------|----------------|----------------|------------------|------|-------|---------------|---------------|
| <b>BSW</b> | 7/16                     | 11,11                  | 14               | 100            | 18             | 8                | 6,2  | 9,25  | C0503500.3053 | C050C400.3053 |
|            | 1/2                      | 12,70                  | 12               | 110            | 20             | 9                | 7    | 10,5  | C0503500.3054 | C050C400.3054 |
|            | 9/16                     | 14,29                  | 12               | 110            | 20             | 11               | 9    | 12    |               |               |
|            | 5/8                      | 15,88                  | 11               | 110            | 22             | 12               | 9    | 13,5  | C0503500.3056 | C050C400.3056 |
|            | 3/4                      | 19,05                  | 10               | 125            | 25             | 14               | 11   | 16,4  | C0503500.3058 | C050C400.3058 |
|            | 7/8                      | 22,23                  | 9                | 140            | 27             | 18               | 14,5 | 19,25 | C0503500.3060 |               |
|            | 1"                       | 25,40                  | 8                | 160            | 30             | 18               | 14,5 | 22    | C0503500.3062 | C050C400.3062 |
|            | 1 1/8                    | 28,58                  | 7                | 180            | 35             | 22               | 18   | 24,75 | C0503500.3063 |               |
|            | 1 1/4                    | 31,75                  | 7                | 180            | 35             | 22               | 18   | 27,75 |               |               |
|            | 1 3/8                    | 34,93                  | 6                | 200            | 40             | 28               | 22   | 30,5  |               |               |
|            | 1 1/2                    | 38,10                  | 6                | 200            | 40             | 28               | 22   | 33,5  |               |               |
|            | 1 3/4                    | 44,45                  | 5                | 220            | 45             | 36               | 29   | 39    |               |               |
|            | 2"                       | 50,80                  | 4 1/2            | 250            | 50             | 40               | 32   | 44,5  |               |               |

≈ DIN 371



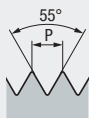
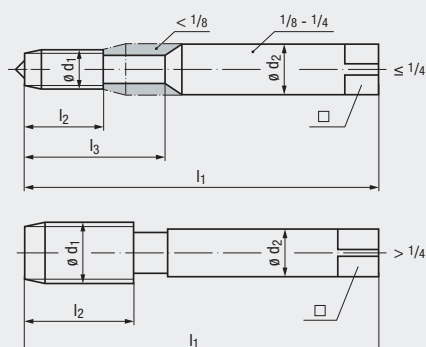
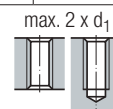
» 266

» 266



**BSW**

BS 84

≈ DIN  
352Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

» 78

P 1.1-3.1

P 1.1-3.1

P 1.1-3.1

P 1.1-3.1

|            | ø d <sub>1</sub><br>inch | ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □    |       | HGB-Set<br>V-Nr.1 | HGB-Set<br>M-Nr.2 | HGB-Set<br>F  | HGB-Set-3S<br>(Nr.1, Nr.2, F) |
|------------|--------------------------|------------------------|------------------|----------------|----------------|----------------|------------------|------|-------|-------------------|-------------------|---------------|-------------------------------|
| <b>BSW</b> | 1/16                     | 1,59                   | 60               | 32             | 8              | —              | 2,5              | 2,1  | 1,15  | H0111019.3044     | H0111029.3044     | H0111001.3044 | H0101001.3044                 |
|            | 1/8                      | 3,18                   | 40               | 40             | 10             | 18             | 3,5              | 2,7  | 2,55  | H0111019.3046     | H0111029.3046     | H0111001.3046 | H0101001.3046                 |
|            | 5/32                     | 3,97                   | 32               | 45             | 12             | 22             | 4,5              | 3,4  | 3,2   | H0111019.3048     | H0111029.3048     | H0111001.3048 | H0101001.3048                 |
|            | 3/16                     | 4,76                   | 24               | 50             | 14             | 25             | 6                | 4,9  | 3,7   | H0111019.3050     | H0111029.3050     | H0111001.3050 | H0101001.3050                 |
|            | 7/32                     | 5,56                   | 24               | 56             | 16             | 28             | 6                | 4,9  | 4,5   | H0111019.3051     | H0111029.3051     | H0111001.3051 | H0101001.3051                 |
|            | 1/4                      | 6,35                   | 20               | 56             | 16             | 28             | 6                | 4,9  | 5,1   | H0111019.3052     | H0111029.3052     | H0111001.3052 | H0101001.3052                 |
|            | 5/16                     | 7,94                   | 18               | 63             | 20             | —              | 6                | 4,9  | 6,5   | H0111019.3053     | H0111029.3053     | H0111001.3053 | H0101001.3053                 |
|            | 3/8                      | 9,53                   | 16               | 70             | 22             | —              | 7                | 5,5  | 7,9   | H0111019.3054     | H0111029.3054     | H0111001.3054 | H0101001.3054                 |
|            | 7/16                     | 11,11                  | 14               | 70             | 22             | —              | 8                | 6,2  | 9,25  | H0111019.3056     | H0111029.3056     | H0111001.3056 | H0101001.3056                 |
|            | 1/2                      | 12,70                  | 12               | 75             | 25             | —              | 9                | 7    | 10,5  | H0111019.3058     | H0111029.3058     | H0111001.3058 | H0101001.3058                 |
|            | 9/16                     | 14,29                  | 12               | 80             | 26             | —              | 11               | 9    | 12    | H0111019.3062     | H0111029.3062     | H0111001.3062 | H0101001.3062                 |
|            | 5/8                      | 15,88                  | 11               | 80             | 27             | —              | 12               | 9    | 13,5  | H0111019.3063     | H0111029.3063     | H0111001.3063 | H0101001.3063                 |
|            | 3/4                      | 19,05                  | 10               | 95             | 32             | —              | 14               | 11   | 16,4  | H0111019.3064     | H0111029.3064     | H0111001.3064 | H0101001.3064                 |
|            | 7/8                      | 22,23                  | 9                | 100            | 32             | —              | 18               | 14,5 | 19,25 | H0111019.3065     | H0111029.3065     | H0111001.3065 | H0101001.3065                 |
|            | 1"                       | 25,40                  | 8                | 110            | 36             | —              | 18               | 14,5 | 22    | H0111019.3066     | H0111029.3066     | H0111001.3066 | H0101001.3066                 |
|            | 1 1/8                    | 28,58                  | 7                | 125            | 40             | —              | 22               | 18   | 24,75 |                   |                   |               |                               |
|            | 1 1/4                    | 31,75                  | 7                | 125            | 40             | —              | 22               | 18   | 27,75 |                   |                   |               |                               |
|            | 1 3/8                    | 34,93                  | 6                | 150            | 50             | —              | 28               | 22   | 30,5  |                   |                   |               |                               |
|            | 1 1/2                    | 38,10                  | 6                | 150            | 50             | —              | 28               | 22   | 33,5  |                   |                   |               |                               |
|            | 1 3/4                    | 44,45                  | 5                | 160            | 58             | —              | 36               | 29   | 39    |                   |                   |               |                               |
|            | 2"                       | 50,80                  | 4 1/2            | 180            | 65             | —              | 40               | 32   | 44,5  |                   |                   |               |                               |

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNE

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

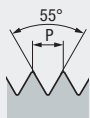
Zubehör

Accessories

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

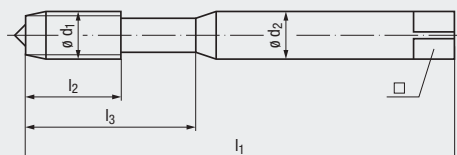
# BSF

BS 84



≈ DIN 371

**STEEL**  
Steel materials



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

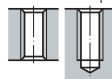
med. „X“

HSSE

C / 2-3

E / 0

max. 2 x d<sub>1</sub>



**K** 1.1-4.2  
**N** 2.3

**Rekord  
1A-STEEL**

**B0101001.3090**  
**B0101001.3092**  
**B0101001.3093**

≈ DIN 374



» 271

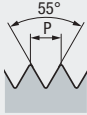


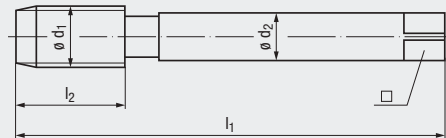
Werkzeug-Aufnahmen der Typenreihe  
Softsynchro® siehe Seite 617 - 644

Tool holders of our Softsynchro® series,  
see page 617 - 644

# BSF

BS 84


≈ DIN  
374

**STEEL**  
Steel  
materials

Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

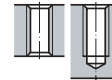
» 78

med. „X“

HSSE

C / 2-3

E / 0

max. 2 x d<sub>1</sub>

**K 1.1-4.2**
**N 2.3**
**Rekord  
2A-STEEL**

|            | ø d <sub>1</sub><br>inch | ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |       |               |
|------------|--------------------------|------------------------|------------------|----------------|----------------|------------------|------|-------|---------------|
| <b>BSF</b> | 7/16                     | 11,11                  | 18               | 100            | 22             | 8                | 6,2  | 9,7   | C0101001.3094 |
|            | 1/2                      | 12,70                  | 16               | 100            | 22             | 9                | 7    | 11,1  | C0101001.3095 |
|            | 5/8                      | 15,88                  | 14               | 110            | 27             | 12               | 9    | 14    | C0101001.3097 |
|            | 3/4                      | 19,05                  | 12               | 125            | 27             | 14               | 11   | 16,75 | C0101001.3099 |
|            | 7/8                      | 22,23                  | 11               | 140            | 32             | 18               | 14,5 | 19,75 | C0101001.3101 |
|            | 1"                       | 25,40                  | 10               | 160            | 36             | 18               | 14,5 | 22,75 | C0101001.3102 |

≈ DIN 371



» 270

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

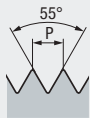
Tr, Tr-F  
Rd

Zubehör  
Accessories

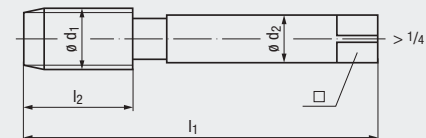
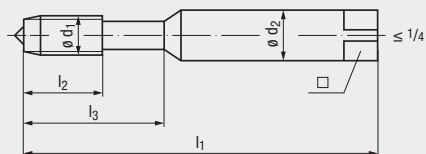

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# BSF

BS 84



≈ DIN  
352



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

Technische Informationen  
Technical information



HSSE

HSSE

med. „X“

med. „X“

A / 5-6

D / 3-4

C / 2-3

C / 2-3

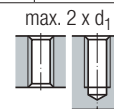
O / P

O / P

O / P

O / P

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 78

P 1.1-3.1

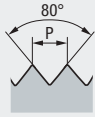
P 1.1-3.1

P 1.1-3.1

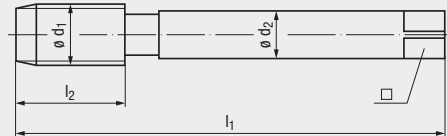
P 1.1-3.1

|            | ø d <sub>1</sub><br>inch | ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □    |       | HGB-Set<br>V-Nr.1 | HGB-Set<br>M-Nr.2 | HGB-Set<br>F  | HGB-Set-3S<br>(Nr.1, Nr.2, F) |
|------------|--------------------------|------------------------|------------------|----------------|----------------|----------------|------------------|------|-------|-------------------|-------------------|---------------|-------------------------------|
| <b>BSF</b> | 3/16                     | 4,76                   | 32               | 50             | 14             | 25             | 6                | 4,9  | 4     | H0111019.3088     | H0111029.3088     | H0111001.3088 | H0101001.3088                 |
|            | 1/4                      | 6,35                   | 26               | 56             | 16             | 28             | 6                | 4,9  | 5,3   | H0111019.3090     | H0111029.3090     | H0111001.3090 | H0101001.3090                 |
|            | 5/16                     | 7,94                   | 22               | 63             | 17             | —              | 6                | 4,9  | 6,8   | H0111019.3092     | H0111029.3092     | H0111001.3092 | H0101001.3092                 |
|            | 3/8                      | 9,53                   | 20               | 70             | 22             | —              | 7                | 5,5  | 8,3   | H0111019.3093     | H0111029.3093     | H0111001.3093 | H0101001.3093                 |
|            | 7/16                     | 11,11                  | 18               | 70             | 22             | —              | 8                | 6,2  | 9,7   | H0111019.3094     | H0111029.3094     | H0111001.3094 | H0101001.3094                 |
|            | 1/2                      | 12,70                  | 16               | 70             | 20             | —              | 9                | 7    | 11,1  | H0111019.3095     | H0111029.3095     | H0111001.3095 | H0101001.3095                 |
|            | 5/8                      | 15,88                  | 14               | 80             | 27             | —              | 12               | 9    | 14    | H0111019.3097     | H0111029.3097     | H0111001.3097 | H0101001.3097                 |
|            | 3/4                      | 19,05                  | 12               | 80             | 22             | —              | 14               | 11   | 16,75 | H0111019.3099     | H0111029.3099     | H0111001.3099 | H0101001.3099                 |
|            | 7/8                      | 22,23                  | 11               | 80             | 22             | —              | 18               | 14,5 | 19,75 |                   |                   |               |                               |
|            | 1"                       | 25,40                  | 10               | 110            | 36             | —              | 18               | 14,5 | 22,75 | H0111019.3102     | H0111029.3102     | H0111001.3102 | H0101001.3102                 |

**Pg**  
DIN 40430



**DIN**  
**40430**



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| Nenngröße<br>Nom. size<br>ø d <sub>1</sub> | ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □  |      |       | Rekord<br>2A-STEEL   |  | Rekord<br>2A-H<br>NT |  |
|--------------------------------------------|------------------------|------------------|----------------|----------------|------------------|----|------|-------|----------------------|--|----------------------|--|
| <b>Pg</b>                                  | 7                      | 12,5             | 20             | 100            | 22               | 9  | 7    | 11,35 | <b>C0101001.4153</b> |  | <b>C0100501.4153</b> |  |
|                                            | 9                      | 15,2             | 18             | 100            | 22               | 12 | 9    | 13,95 | <b>C0101001.4154</b> |  | <b>C0100501.4154</b> |  |
|                                            | 11                     | 18,6             | 18             | 110            | 25               | 14 | 11   | 17,35 | <b>C0101001.4155</b> |  | <b>C0100501.4155</b> |  |
|                                            | 13,5                   | 20,4             | 18             | 125            | 25               | 16 | 12   | 19,15 | <b>C0101001.4156</b> |  | <b>C0100501.4156</b> |  |
|                                            | 16                     | 22,5             | 18             | 125            | 25               | 18 | 14,5 | 21,25 | <b>C0101001.4157</b> |  | <b>C0100501.4157</b> |  |
|                                            | 21                     | 28,3             | 16             | 150            | 28               | 22 | 18   | 26,95 | C0101001.4158        |  | C0100501.4158        |  |
|                                            | 29                     | 37,0             | 16             | 170            | 30               | 28 | 22   | 35,6  | C0101001.4159        |  | C0100501.4159        |  |
|                                            | 36                     | 47,0             | 16             | 190            | 32               | 36 | 29   | 45,6  | C0101001.4160        |  |                      |  |
|                                            | 42                     | 54,0             | 16             | 190            | 32               | 40 | 32   | 52,6  | C0101001.4161        |  |                      |  |
|                                            | 48                     | 59,3             | 16             | 220            | 36               | 45 | 35   | 57,9  | C0101001.4162        |  |                      |  |

**STEEL**  
Steel  
materials



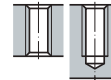
„X“

HSSE

C / 2-3

E / O

max. 2 x d<sub>1</sub>



**K** 1.1-4.2  
**N** 2.3

**H**  
Materials of high  
tensile strength



„X“

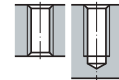
NT

HSSE

C / 2-3

E / O / P

max. 2 x d<sub>1</sub>



**K** 1.1-4.2  
**N** 4.1

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

**Pg**

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
Rd

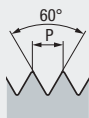
Zubehör  
Accessories



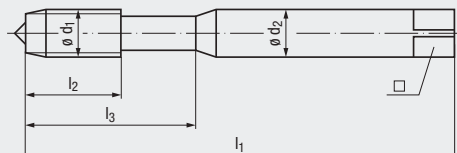
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# MJ

DIN ISO 5855



DIN  
371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

AL  
Aluminium  
wrought alloys



new



l<sub>2</sub> ≈ 10 x P

TI  
Titanium



4H  
GLT-104  
HSSE  
R45  
C / 2-3  
E / O

max. 2,5 x d<sub>1</sub>



N 1.1-1.4, 2.1

4HX  
TICN  
HSSE  
L15  
D / 4-5  
E / O / P

max. 3 x d<sub>1</sub>



P 4.1-5.1  
M 3.1-4.1  
N 2.4-2.5, 2.7  
S 1.1-2.2, 2.4

4HX  
TICN  
HSSE  
R15  
C / 2-3  
E / O / P

max. 2 x d<sub>1</sub>

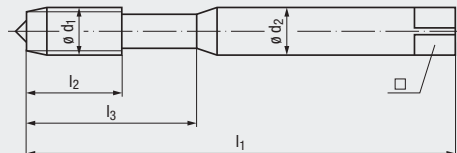


P 4.1-5.1  
M 3.1-4.1  
N 2.4-2.5, 2.7  
S 1.1-2.2, 2.4

|    | ∅ d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ∅ d <sub>2</sub> | □   |     | Enorm<br>1-AL<br>GLT-104 |  | Rekord<br>1C-TI<br>TICN | Rekord<br>1D-TI<br>TICN |
|----|------------------------|---------|----------------|----------------|----------------|------------------|-----|-----|--------------------------|--|-------------------------|-------------------------|
| MJ | 3                      | x 0,5   | 56             | 11             | 18             | 3,5              | 2,7 | 2,6 | B0503G10.1229            |  | B0309611.1229           | B0459611.1229           |
|    | 4                      | x 0,7   | 63             | 13             | 21             | 4,5              | 3,4 | 3,4 | B0503G10.1231            |  | B0309611.1231           | B0459611.1231           |
|    | 5                      | x 0,8   | 70             | 15             | 25             | 6                | 4,9 | 4,3 | B0503G10.1232            |  | B0309611.1232           | B0459611.1232           |
|    | 6                      | x 1     | 80             | 17             | 30             | 6                | 4,9 | 5,1 | B0503G10.1233            |  | B0309611.1233           | B0459611.1233           |
|    | 8                      | x 1     | 90             | 17             | 35             | 8                | 6,2 | 7,1 | B0503G10.1235            |  | B0309611.1235           | B0459611.1235           |
|    | 8                      | x 1,25  | 90             | 20             | 35             | 8                | 6,2 | 6,9 | B0503G10.2026            |  | B0309611.2026           | B0459611.2026           |
|    | 10                     | x 1,25  | 100            | 18             | 39             | 10               | 8   | 8,9 | B0503G10.1236            |  | B0309611.1236           | B0459611.1236           |
|    | 10                     | x 1,5   | 100            | 22             | 39             | 10               | 8   | 8,6 | B0503G10.2308            |  | B0309611.2308           | B0459611.2308           |



DIN ISO 5855

**DIN  
371**

**Technische Informationen**  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

**Gewindetiefe und Lochform**  
Thread depth and hole type

**Einsatzgebiete – Material**  
Applications – material

» 78

|           | $\varnothing d_1$<br>mm | P<br>mm | $l_1$ | $l_2$ | $l_3$ | $\varnothing d_2$ | $\square$ |     |                                     |                                      |  |
|-----------|-------------------------|---------|-------|-------|-------|-------------------|-----------|-----|-------------------------------------|--------------------------------------|--|
| <b>MJ</b> | 3                       | x 0,5   | 56    | 11    | 18    | 3,5               | 2,7       | 2,6 | <b>Rekord<br/>1C-Ni<br/>PM-TiCN</b> | <b>Rekord<br/>1DF-Ni<br/>PM-TiCN</b> |  |
|           | 4                       | x 0,7   | 63    | 13    | 21    | 4,5               | 3,4       | 3,4 | <b>B030J411.1229</b>                | <b>B438J411.1229</b>                 |  |
|           | 5                       | x 0,8   | 70    | 15    | 25    | 6                 | 4,9       | 4,3 | <b>B030J411.1231</b>                | <b>B438J411.1231</b>                 |  |
|           | 6                       | x 1     | 80    | 17    | 30    | 6                 | 4,9       | 5,1 | <b>B030J411.1232</b>                | <b>B438J411.1232</b>                 |  |
|           | 8                       | x 1     | 90    | 17    | 35    | 8                 | 6,2       | 7,1 | <b>B030J411.1233</b>                | <b>B438J411.1233</b>                 |  |
|           | 8                       | x 1,25  | 90    | 20    | 35    | 8                 | 6,2       | 6,9 | <b>B030J411.1235</b>                | <b>B438J411.1235</b>                 |  |
|           | 10                      | x 1,25  | 100   | 18    | 39    | 10                | 8         | 8,9 | <b>B030J411.2026</b>                | <b>B438J411.2026</b>                 |  |
|           | 10                      | x 1,5   | 100   | 22    | 39    | 10                | 8         | 8,6 | <b>B030J411.1236</b>                | <b>B438J411.1236</b>                 |  |
|           |                         |         |       |       |       |                   |           |     | <b>B030J411.2308</b>                | <b>B438J411.2308</b>                 |  |

**NI**  
Nickel  
alloys


4HX

4HX

TiCN

TiCN

**HSSE-PM**
**HSSE-PM**

L08

R10

D / 4-5

C / 2-3

O / P

O / P

max. 3 x  $d_1$ 

max. 2 x  $d_1$ 

**N 2.8**  
**S 2.3, 2.5-2.6**
**N 2.8**  
**S 2.3, 2.5-2.6**

Product  
Finder

 $v_c$ 

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

**MJ**

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Zubehör

Accessories



Spiralbohrer siehe Seite 11 - 70

Twist drills, see page 11 - 70

|                                                                                                                                                                                                                                     |  |  |  |  |  |  |  |  |                                                                                                            |                                                                                                                                                 |                                                                          |                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------|
| <div>UNJC</div> <div>ASME B1.1 1)</div> <div></div> <div></div>                                                                                                                                                                     |  |  |  |  |  |  |  |  | <div>≈ DIN 371</div>                                                                                       | <div>AL<br/>Aluminium<br/>wrought alloys</div> <div></div> <div></div> <div><div>new</div><div><math>l_2 \approx 10 \times P</math></div></div> | <div>Ti<br/>Titanium</div> <div></div> <div></div>                       |                                                                    |
| <div>Technische Informationen<br/>Technical information</div>                                                                                                                                                                       |  |  |  |  |  |  |  |  | <div>Toleranz · Tolerance<br/>Beschichtung · Coating<br/>Schneidstoff · Cutting material</div> <div></div> | <div>3B<br/>GLT-104<br/>HSSE<br/>R45<br/>C / 2-3<br/>E / O</div>                                                                                | <div>3BX<br/>TICN<br/>HSSE<br/>L15<br/>D / 4-5<br/>E / O / P</div>       | <div>3BX<br/>TICN<br/>HSSE<br/>R15<br/>C / 2-3<br/>E / O / P</div> |
| <div>Gewindetiefe und Lochform<br/>Thread depth and hole type</div>                                                                                                                                                                 |  |  |  |  |  |  |  |  | <div>max. 2,5 x d<sub>1</sub></div> <div></div>                                                            | <div>max. 3 x d<sub>1</sub></div> <div></div>                                                                                                   | <div>max. 2 x d<sub>1</sub></div> <div></div>                            |                                                                    |
| <div>Einsatzgebiete – Material<br/>Applications – material</div> <div>» 78</div>                                                                                                                                                    |  |  |  |  |  |  |  |  | <div>N 1.1-1.4, 2.1</div>                                                                                  | <div>P 4.1-5.1<br/>M 3.1-4.1<br/>N 2.4-2.5, 2.7<br/>S 1.1-2.2, 2.4</div>                                                                        | <div>P 4.1-5.1<br/>M 3.1-4.1<br/>N 2.4-2.5, 2.7<br/>S 1.1-2.2, 2.4</div> |                                                                    |
| <div><div><div><div>Ø d<sub>1</sub><br/>inch</div><div>P<br/>Gg/1" (tpi)</div></div><div><div>l<sub>1</sub></div><div>l<sub>2</sub></div><div>l<sub>3</sub></div><div>Ø d<sub>2</sub></div><div></div></div></div><div></div></div> |  |  |  |  |  |  |  |  | <div>Enorm<br/>1-AL<br/>GLT-104</div>                                                                      | <div>Rekord<br/>1C-Ti<br/>TICN</div>                                                                                                            | <div>Rekord<br/>1D-Ti<br/>TICN</div>                                     |                                                                    |
| <div>Nr. 4 0.1120 40 56 11 18 3,5 2,7 2,3</div>                                                                                                                                                                                     |  |  |  |  |  |  |  |  | <div>B0503G10.5479</div>                                                                                   | <div>B0309611.5479</div>                                                                                                                        | <div>B0459611.5479</div>                                                 |                                                                    |
| <div>Nr. 6 0.1380 32 56 12 20 4 3 2,85</div>                                                                                                                                                                                        |  |  |  |  |  |  |  |  | <div>B0503G10.5481</div>                                                                                   | <div>B0309611.5481</div>                                                                                                                        | <div>B0459611.5481</div>                                                 |                                                                    |
| <div>Nr. 8 0.1640 32 63 13 21 4,5 3,4 3,5</div>                                                                                                                                                                                     |  |  |  |  |  |  |  |  | <div>B0503G10.5482</div>                                                                                   | <div>B0309611.5482</div>                                                                                                                        | <div>B0459611.5482</div>                                                 |                                                                    |
| <div>Nr. 10 0.1900 24 70 15 25 6 4,9 3,9</div>                                                                                                                                                                                      |  |  |  |  |  |  |  |  | <div>B0503G10.5483</div>                                                                                   | <div>B0309611.5483</div>                                                                                                                        | <div>B0459611.5483</div>                                                 |                                                                    |
| <div>1/4 0.2500 20 80 17 30 7 5,5 5,25</div>                                                                                                                                                                                        |  |  |  |  |  |  |  |  | <div>B0503G10.5485</div>                                                                                   | <div>B0309611.5485</div>                                                                                                                        | <div>B0459611.5485</div>                                                 |                                                                    |
| <div>5/16 0.3125 18 90 20 35 8 6,2 6,7</div>                                                                                                                                                                                        |  |  |  |  |  |  |  |  | <div>B0503G10.5486</div>                                                                                   | <div>B0309611.5486</div>                                                                                                                        | <div>B0459611.5486</div>                                                 |                                                                    |
| <div>3/8 0.3750 16 100 22 39 10 8 8,1</div>                                                                                                                                                                                         |  |  |  |  |  |  |  |  | <div>B0503G10.5487</div>                                                                                   | <div>B0309611.5487</div>                                                                                                                        | <div>B0459611.5487</div>                                                 |                                                                    |

1) früher ASME B1.15  
formerly ASME B1.15



| NI<br>Nickel<br>alloys                                                             |                                                                                    | Z<br>CNC-controlled<br>machines                                                    |                                                                                   |  |  |  |             |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|--|-------------|
|   |   |   |  |  |  |  |             |
|   |   |   |  |  |  |  |             |
| 3BX                                                                                | 3BX                                                                                | 3B                                                                                 | 3B                                                                                |  |  |  |             |
| TICN                                                                               | TICN                                                                               | GLT-1                                                                              | GLT-1                                                                             |  |  |  |             |
| HSSE-PM                                                                            | HSSE-PM                                                                            | HSSE                                                                               | HSSE                                                                              |  |  |  |             |
| L08                                                                                | R10                                                                                | R45                                                                                | R45                                                                               |  |  |  |             |
| D / 4-5                                                                            | C / 2-3                                                                            | C / 2-3                                                                            | C / 2-3                                                                           |  |  |  |             |
| O / P                                                                              | O / P                                                                              | E / O / P                                                                          | E / O / P                                                                         |  |  |  |             |
| max. 3 x d <sub>1</sub>                                                            | max. 2 x d <sub>1</sub>                                                            | max. 3 x d <sub>1</sub>                                                            |                                                                                   |  |  |  |             |
|  |  |  |                                                                                   |  |  |  |             |
| <b>N</b> 2.8                                                                       | <b>N</b> 2.8                                                                       | <b>P</b> 1.1-3.1                                                                   | <b>P</b> 1.1-4.1                                                                  |  |  |  |             |
| <b>S</b> 2.3, 2.5-2.6                                                              | <b>S</b> 2.3, 2.5-2.6                                                              |                                                                                    | <b>M</b> 1.1-4.1                                                                  |  |  |  |             |
|                                                                                    |                                                                                    |                                                                                    | <b>N</b> 1.4, 2.1-2.2                                                             |  |  |  |             |
|                                                                                    |                                                                                    |                                                                                    | <b>N</b> 2.4-2.5                                                                  |  |  |  |             |
|                                                                                    |                                                                                    |                                                                                    | <b>S</b> 1.1                                                                      |  |  |  |             |
| <b>Rekord</b><br>1C-NI<br>PM-TICN                                                  | <b>Rekord</b><br>1DF-NI<br>PM-TICN                                                 | <b>Enorm</b><br>1-Z                                                                | <b>Enorm</b><br>1-Z<br>GLT-1                                                      |  |  |  |             |
| B030J411.5479                                                                      | B438J411.5479                                                                      | B0503510.5479                                                                      | B050C410.5479                                                                     |  |  |  | Nr. 4 - 40  |
| B030J411.5481                                                                      | B438J411.5481                                                                      | B0503510.5481                                                                      | B050C410.5481                                                                     |  |  |  | Nr. 6 - 32  |
| B030J411.5482                                                                      | B438J411.5482                                                                      | B0503510.5482                                                                      | B050C410.5482                                                                     |  |  |  | Nr. 8 - 32  |
| B030J411.5483                                                                      | B438J411.5483                                                                      | B0503510.5483                                                                      | B050C410.5483                                                                     |  |  |  | Nr. 10 - 24 |
| B030J411.5485                                                                      | B438J411.5485                                                                      | B0503510.5485                                                                      | B050C410.5485                                                                     |  |  |  | 1/4 - 20    |
| B030J411.5486                                                                      | B438J411.5486                                                                      | B0503510.5486                                                                      | B050C410.5486                                                                     |  |  |  | 5/16 - 18   |
| B030J411.5487                                                                      | B438J411.5487                                                                      | B0503510.5487                                                                      | B050C410.5487                                                                     |  |  |  | 3/8 - 16    |

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

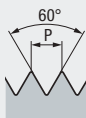
Tr, Tr-F  
Rd

Zubehör  
Accessories

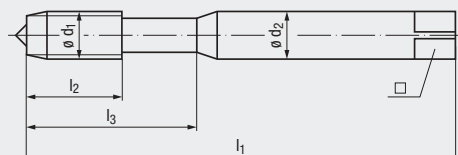

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# UNJF

ASME B1.1 1)



≈ DIN  
371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

**AL**  
Aluminium  
wrought alloys



new



l<sub>2</sub> ≈ 10 x P

**Ti**  
Titanium



3B  
GLT-104  
HSSE  
R45  
C / 2-3  
E / O

max. 2,5 x d<sub>1</sub>



**N** 1.1-1.4, 2.1

3BX  
TICN  
HSSE  
L15  
D / 4-5  
E / O / P

max. 3 x d<sub>1</sub>



**P** 4.1-5.1  
**M** 3.1-4.1  
**N** 2.4-2.5, 2.7  
**S** 1.1-2.2, 2.4

3BX  
TICN  
HSSE  
R15  
C / 2-3  
E / O / P

max. 2 x d<sub>1</sub>



**P** 4.1-5.1  
**M** 3.1-4.1  
**N** 2.4-2.5, 2.7  
**S** 1.1-2.2, 2.4

|                          |        |                  |                |                |                |                  |     |  | Enorm<br>1-AL<br>GLT-104 |  | Rekord<br>1C-Ti<br>TICN | Rekord<br>1D-Ti<br>TICN |
|--------------------------|--------|------------------|----------------|----------------|----------------|------------------|-----|-------------------------------------------------------------------------------------|--------------------------|--|-------------------------|-------------------------|
| ø d <sub>1</sub><br>inch |        | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □   |                                                                                     |                          |  |                         |                         |
| Nr. 4                    | 0.1120 | 48               | 56             | 11             | 18             | 3,5              | 2,7 | 2,4                                                                                 | B0503G10.5505            |  | B0309611.5505           | B0459611.5505           |
| Nr. 6                    | 0.1380 | 40               | 56             | 12             | 20             | 4                | 3   | 3                                                                                   | B0503G10.5507            |  | B0309611.5507           | B0459611.5507           |
| Nr. 8                    | 0.1640 | 36               | 63             | 13             | 21             | 4,5              | 3,4 | 3,55                                                                                | B0503G10.5508            |  | B0309611.5508           | B0459611.5508           |
| Nr. 10                   | 0.1900 | 32               | 70             | 15             | 25             | 6                | 4,9 | 4,15                                                                                | B0503G10.5509            |  | B0309611.5509           | B0459611.5509           |
| 1/4                      | 0.2500 | 28               | 80             | 17             | 30             | 7                | 5,5 | 5,55                                                                                | B0503G10.5511            |  | B0309611.5511           | B0459611.5511           |
| 5/16                     | 0.3125 | 24               | 90             | 17             | 35             | 8                | 6,2 | 7                                                                                   | B0503G10.5512            |  | B0309611.5512           | B0459611.5512           |
| 3/8                      | 0.3750 | 24               | 90             | 18             | 35             | 10               | 8   | 8,6                                                                                 | B0503G10.5513            |  | B0309611.5513           | B0459611.5513           |

1) früher ASME B1.15  
formerly ASME B1.15



Spannzangen-Aufnahmen mit  
integrierter Übersetzung der Typenreihe  
Speedsynchro® Modular NFC  
siehe Seite 646 - 648

Collet holders with integrated transmission  
of our Speedsynchro® Modular NFC series,  
see page 646 - 648

| NI<br>Nickel<br>alloys                                                             |                                                                                    | Z<br>CNC-controlled<br>machines                                                    |                                                                                   |  |  |  |             |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|--|-------------|
|   |   |   |  |  |  |  |             |
|   |   |   |  |  |  |  |             |
| 3BX                                                                                | 3BX                                                                                | 3B                                                                                 | 3B                                                                                |  |  |  |             |
| TICN                                                                               | TICN                                                                               | GLT-1                                                                              | GLT-1                                                                             |  |  |  |             |
| HSSE-PM                                                                            | HSSE-PM                                                                            | HSSE                                                                               | HSSE                                                                              |  |  |  |             |
| L08                                                                                | R10                                                                                | R45                                                                                | R45                                                                               |  |  |  |             |
| D / 4-5                                                                            | C / 2-3                                                                            | C / 2-3                                                                            | C / 2-3                                                                           |  |  |  |             |
| O / P                                                                              | O / P                                                                              | E / O / P                                                                          | E / O / P                                                                         |  |  |  |             |
| max. 3 x d <sub>1</sub>                                                            | max. 2 x d <sub>1</sub>                                                            | max. 3 x d <sub>1</sub>                                                            |                                                                                   |  |  |  |             |
|  |  |  |                                                                                   |  |  |  |             |
| <b>N</b> 2.8                                                                       | <b>N</b> 2.8                                                                       | <b>P</b> 1.1-3.1                                                                   | <b>P</b> 1.1-4.1                                                                  |  |  |  |             |
| <b>S</b> 2.3, 2.5-2.6                                                              | <b>S</b> 2.3, 2.5-2.6                                                              |                                                                                    | <b>M</b> 1.1-4.1                                                                  |  |  |  |             |
|                                                                                    |                                                                                    |                                                                                    | <b>N</b> 1.4, 2.1-2.2                                                             |  |  |  |             |
|                                                                                    |                                                                                    |                                                                                    | <b>N</b> 2.4-2.5                                                                  |  |  |  |             |
|                                                                                    |                                                                                    |                                                                                    | <b>S</b> 1.1                                                                      |  |  |  |             |
| <b>Rekord</b><br>1C-NI<br>PM-TICN                                                  | <b>Rekord</b><br>1DF-NI<br>PM-TICN                                                 | <b>Enorm</b><br>1-Z                                                                | <b>Enorm</b><br>1-Z<br>GLT-1                                                      |  |  |  |             |
| B030J411.5505                                                                      | B438J411.5505                                                                      | B0503510.5505                                                                      | B050C410.5505                                                                     |  |  |  | Nr. 4 - 48  |
| B030J411.5507                                                                      | B438J411.5507                                                                      | B0503510.5507                                                                      | B050C410.5507                                                                     |  |  |  | Nr. 6 - 40  |
| B030J411.5508                                                                      | B438J411.5508                                                                      | B0503510.5508                                                                      | B050C410.5508                                                                     |  |  |  | Nr. 8 - 36  |
| B030J411.5509                                                                      | B438J411.5509                                                                      | B0503510.5509                                                                      | B050C410.5509                                                                     |  |  |  | Nr. 10 - 32 |
| B030J411.5511                                                                      | B438J411.5511                                                                      | B0503510.5511                                                                      | B050C410.5511                                                                     |  |  |  | 1/4 - 28    |
| B030J411.5512                                                                      | B438J411.5512                                                                      | B0503510.5512                                                                      | B050C410.5512                                                                     |  |  |  | 5/16 - 24   |
| B030J411.5513                                                                      | B438J411.5513                                                                      | B0503510.5513                                                                      | B050C410.5513                                                                     |  |  |  | 3/8 - 24    |

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

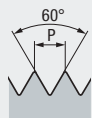
Tr, Tr-F  
Rd

Zubehör  
Accessories

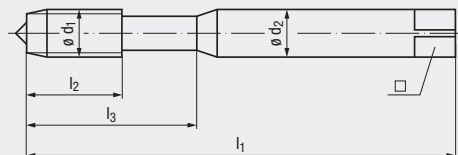

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# EG M (STI)

DIN 8140-2



**DIN 40435**



**Technische Informationen**  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



**Gewindetiefe und Lochform**  
Thread depth and hole type

**Einsatzgebiete – Material**  
Applications – material

» 78

**VA**  
Stainless steel materials



**AL**  
Aluminium wrought alloys



**new**



6H mod.  
GLT-1  
HSSE

B / 4-5  
E / O / P

max. 3 x d<sub>1</sub>



**P** 1.1-4.1  
**M** 1.1-4.1  
**N** 2.2

**Rekord 1B-VA GLT-1**

B020C300.0965  
B020C300.0966  
B020C300.0968  
B020C300.0970  
B020C300.0971  
B020C300.0973

» 282

6H mod.  
HSSE

B / ≈3  
E / O

max. 3 x d<sub>1</sub>



**N** 1.4

**N** 1.1-1.4, 2.1

**Rekord 1B-AL**

B0204500.0965  
B0204500.0966  
B0204500.0968  
B0204500.0970  
B0204500.0971  
B0204500.0973

**Rekord 1B-AL GLT-104**

B0203G00.0965  
B0203G00.0966  
B0203G00.0968  
B0203G00.0970  
B0203G00.0971  
B0203G00.0973

DIN 40435



| AL<br>Aluminium<br>wrought alloys                                                                                                            |         | Z<br>CNC-controlled<br>machines                                                                                               |                                                                                                                                              |                                                                                                                               |                                                                                                                                              |  |                 |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------|
| <div>new</div>  <p><math>l_2 \approx 10 \times P</math></p> |         |  <p><math>l_2 \approx 10 \times P</math></p> | <div>new</div>  <p><math>l_2 \approx 10 \times P</math></p> |  <p><math>l_2 \approx 10 \times P</math></p> | <div>new</div>  <p><math>l_2 \approx 10 \times P</math></p> |  |                 |
|                                                                                                                                              | 6H mod. | 6H mod.                                                                                                                       | 6H mod.                                                                                                                                      | 6H mod.                                                                                                                       | 6H mod.                                                                                                                                      |  |                 |
|                                                                                                                                              | GLT-104 |                                                                                                                               | GLT-1                                                                                                                                        |                                                                                                                               | GLT-1                                                                                                                                        |  |                 |
|                                                                                                                                              | HSSE    | HSSE                                                                                                                          | HSSE                                                                                                                                         | HSSE                                                                                                                          | HSSE                                                                                                                                         |  |                 |
|                                                                                                                                              | R45     | R45                                                                                                                           | R45                                                                                                                                          | R45                                                                                                                           | R45                                                                                                                                          |  |                 |
|                                                                                                                                              | C / 2-3 | C / 2-3                                                                                                                       | C / 2-3                                                                                                                                      | E / 1,5-2                                                                                                                     | E / 1,5-2                                                                                                                                    |  |                 |
|                                                                                                                                              | E / O   | E / O / P                                                                                                                     | E / O / P                                                                                                                                    | E / O / P                                                                                                                     | E / O / P                                                                                                                                    |  |                 |
| max. 2,5 x d <sub>1</sub>                                                                                                                    |         | max. 3 x d <sub>1</sub>                                                                                                       |                                                                                                                                              |                                                                                                                               |                                                                                                                                              |  |                 |
|                                                                                                                                              |         |                                                                                                                               |                                                                                                                                              |                                                                                                                               |                                                                                                                                              |  |                 |
| <b>N</b> 1.1-1.4, 2.1                                                                                                                        |         | <b>P</b> 1.1-3.1                                                                                                              | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1                                            | <b>P</b> 1.1-3.1                                                                                                              | <b>P</b> 1.1-4.1<br><b>M</b> 1.1-4.1<br><b>N</b> 1.4, 2.1-2.2<br><b>N</b> 2.4-2.5<br><b>S</b> 1.1                                            |  |                 |
| <b>Enorm</b><br>1-AL<br>GLT-104                                                                                                              |         | <b>Enorm</b><br>1-Z                                                                                                           | <b>Enorm</b><br>1-Z<br>GLT-1                                                                                                                 | <b>Enorm</b><br>1-Z/E                                                                                                         | <b>Enorm</b><br>1-Z/E<br>GLT-1                                                                                                               |  |                 |
| B0503G00.0965                                                                                                                                |         | B0503500.0965                                                                                                                 | B050C400.0965                                                                                                                                | B0513500.0965                                                                                                                 | B051C400.0965                                                                                                                                |  | <b>EG M</b> 2,5 |
| B0503G00.0966                                                                                                                                |         | B0503500.0966                                                                                                                 | B050C400.0966                                                                                                                                | B0513500.0966                                                                                                                 | B051C400.0966                                                                                                                                |  |                 |
| B0503G00.0968                                                                                                                                |         | B0503500.0968                                                                                                                 | B050C400.0968                                                                                                                                | B0513500.0968                                                                                                                 | B051C400.0968                                                                                                                                |  |                 |
| B0503G00.0970                                                                                                                                |         | B0503500.0970                                                                                                                 | B050C400.0970                                                                                                                                | B0513500.0970                                                                                                                 | B051C400.0970                                                                                                                                |  |                 |
| B0503G00.0971                                                                                                                                |         | B0503500.0971                                                                                                                 | B050C400.0971                                                                                                                                | B0513500.0971                                                                                                                 | B051C400.0971                                                                                                                                |  |                 |
| B0503G00.0973                                                                                                                                |         | B0503500.0973                                                                                                                 | B050C400.0973                                                                                                                                | B0513500.0973                                                                                                                 | B051C400.0973                                                                                                                                |  | 8               |
| 282                                                                                                                                          |         | 283                                                                                                                           | 283                                                                                                                                          | 283                                                                                                                           | 283                                                                                                                                          |  |                 |

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

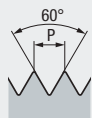
Tr, Tr-F  
Rd

Zubehör  
Accessories

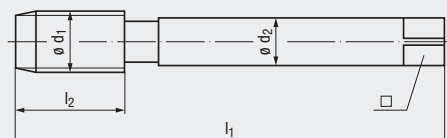

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# EG M (STI)

DIN 8140-2



DIN  
40435



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

VA  
Stainless steel  
materials



AL  
Aluminium  
wrought alloys



new



6H mod.  
GLT-1  
HSSE

B / 4-5  
E / O / P

max. 3 x d<sub>1</sub>



P 1.1-4.1  
M 1.1-4.1  
N 2.2

6H mod.  
GLT-104  
HSSE  
R35

C / 2-3  
E / O

max. 2,5 x d<sub>1</sub>



N 1.1-1.4, 2.1

Rekord  
2B-VA  
GLT-1

C020C300.0975  
C020C300.0977  
C020C300.0979  
C020C300.0981

» 280

Enorm  
2-AL  
GLT-104

C0503G00.0975  
C0503G00.0977

» 281

DIN 40435

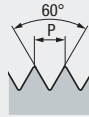
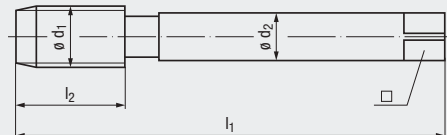


Bohrgewindefräser für  
Metrisches EG-Gewinde  
siehe Seite 386 - 387

Drill thread mills for  
Metric STI thread,  
see page 386 - 387

# EG M (STI)

DIN 8140-2


**DIN  
40435**

**Technische Informationen**  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| Nenngröße<br>Nom. size<br>ø d <sub>1</sub> | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □  |      |
|--------------------------------------------|------------------------|---------|----------------|----------------|------------------|----|------|
| <b>EG M</b>                                | 10                     | 11,948  | 1,5            | 100            | 15               | 9  | 7    |
|                                            | 12                     | 14,274  | 1,75           | 110            | 20               | 11 | 9    |
|                                            | 14                     | 16,598  | 2              | 110            | 20               | 12 | 9    |
|                                            | 16                     | 18,598  | 2              | 125            | 20               | 14 | 11   |
|                                            | 18                     | 21,248  | 2,5            | 140            | 27               | 18 | 14,5 |
|                                            | 20                     | 23,248  | 2,5            | 160            | 30               | 18 | 14,5 |

DIN 40435


**Z**  
CNC-controlled  
machines

**new**

**new**


6H mod.

6H mod.

6H mod.

6H mod.

HSSE

HSSE

HSSE

HSSE

R45

R45

R45

R45

C / 2-3

C / 2-3

E / 1,5-2

E / 1,5-2

E / O / P

E / O / P

E / O / P

E / O / P

max. 3 x d<sub>1</sub>

**P 1.1-3.1**
**P 1.1-4.1**
**P 1.1-3.1**
**P 1.1-4.1**
**M 1.1-4.1**
**N 1.4, 2.1-2.2**
**N 2.4-2.5**
**S 1.1**
**M 1.1-4.1**
**N 1.4, 2.1-2.2**
**N 2.4-2.5**
**S 1.1**
**Enorm  
2-Z**
**Enorm  
2-Z  
GLT-1**
**Enorm  
2-Z/E**
**Enorm  
2-Z/E  
GLT-1**
**C0503500.0975  
C0503500.0977**
**C050C400.0975  
C050C400.0977**
**C0513500.0975  
C0513500.0977**
**C051C400.0975  
C051C400.0977**
**C0503500.0979**
**C050C400.0979**
**C0513500.0979**
**C051C400.0979**
**C0503500.0981**
**C050C400.0981**
**C0513500.0981**
**C051C400.0981**

» 281

» 281

» 281

» 281

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

**EG (STI)**

SELF-LOCK

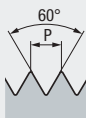
Tr, Tr-F  
Rd

Zubehör  
Accessories

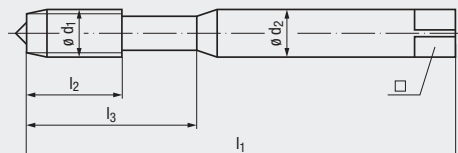

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# EG UNC (STI)

ASME B18.29.1



≈ DIN 371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| <p>Nenngröße<br/>Nom. size</p> <p>Ø d<sub>1</sub> mm</p> <p>P<br/>Gg/1" (tpi)</p> <p>l<sub>1</sub> l<sub>2</sub> l<sub>3</sub> Ø d<sub>2</sub> □</p> |        |       |    |     |    |    |     |     |     | <p>Rekord<br/>1B-VA<br/>GLT-1</p> |  | <p>Enorm<br/>1-AL<br/>GLT-104</p> |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------|----|-----|----|----|-----|-----|-----|-----------------------------------|--|-----------------------------------|--|
| EG                                                                                                                                                   | Nr. 4  | 3,671 | 40 | 63  | 13 | 21 | 4,5 | 3,4 | 3,1 | B020C300.5611                     |  | B0503G00.5611                     |  |
|                                                                                                                                                      | Nr. 6  | 4,536 | 32 | 70  | 14 | 25 | 6   | 4,9 | 3,8 | B020C300.5613                     |  | B0503G00.5613                     |  |
|                                                                                                                                                      | Nr. 8  | 5,197 | 32 | 80  | 16 | 30 | 6   | 4,9 | 4,4 | B020C300.5614                     |  | B0503G00.5614                     |  |
|                                                                                                                                                      | Nr. 10 | 6,200 | 24 | 80  | 17 | 30 | 7   | 5,5 | 5,2 | B020C300.5615                     |  | B0503G00.5615                     |  |
|                                                                                                                                                      | 1/4    | 8,002 | 20 | 90  | 20 | 35 | 8   | 6,2 | 6,7 | B020C300.5617                     |  | B0503G00.5617                     |  |
|                                                                                                                                                      | 5/16   | 9,771 | 18 | 100 | 22 | 39 | 10  | 8   | 8,4 | B020C300.5618                     |  | B0503G00.5618                     |  |
| ≈ DIN 376                                                                                                                                            |        |       |    |     |    |    |     |     |     | » 286                             |  |                                   |  |

VA  
Stainless steel  
materials



AL  
Aluminium  
wrought alloys



new



l<sub>2</sub> ≈ 10 x P

2B  
GLT-1  
HSSE

B / 4-5  
E / 0 / P

max. 3 x d<sub>1</sub>



P 1.1-4.1  
M 1.1-4.1  
N 2.2

2B  
GLT-104  
HSSE  
R45

C / 2-3  
E / 0

max. 2,5 x d<sub>1</sub>

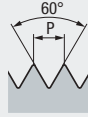
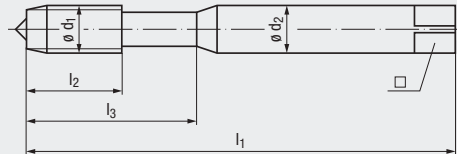


N 1.1-1.4, 2.1



# EG UNC (STI)

ASME B18.29.1


≈ DIN  
371

Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| Nenngröße<br>Nom. size<br>Ø d <sub>1</sub> | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |     |  | Enorm<br>1-Z/E       | Enorm<br>1-Z/E<br>GLT-1 |
|--------------------------------------------|------------------------|------------------|----------------|----------------|----------------|------------------|-----|-----|--|----------------------|-------------------------|
| <b>EG</b> Nr. 4                            | 3,671                  | 40               | 63             | 7              | 21             | 4,5              | 3,4 | 3,1 |  | <b>B0513500.5611</b> | <b>B051C400.5611</b>    |
| Nr. 6                                      | 4,536                  | 32               | 70             | 8              | 25             | 6                | 4,9 | 3,8 |  | <b>B0513500.5613</b> | <b>B051C400.5613</b>    |
| Nr. 8                                      | 5,197                  | 32               | 80             | 8              | 30             | 6                | 4,9 | 4,4 |  | <b>B0513500.5614</b> | <b>B051C400.5614</b>    |
| Nr. 10                                     | 6,200                  | 24               | 80             | 10             | 30             | 7                | 5,5 | 5,2 |  | <b>B0513500.5615</b> | <b>B051C400.5615</b>    |
| 1/4                                        | 8,002                  | 20               | 90             | 14             | 35             | 8                | 6,2 | 6,7 |  | <b>B0513500.5617</b> | <b>B051C400.5617</b>    |
| 5/16                                       | 9,771                  | 18               | 100            | 16             | 39             | 10               | 8   | 8,4 |  | <b>B0513500.5618</b> | <b>B051C400.5618</b>    |
| ≈ DIN 376                                  |                        |                  |                |                |                |                  |     |     |  | 286                  | 286                     |

max. 3 x d<sub>1</sub>


P 1.1-3.1

P 1.1-4.1

M 1.1-4.1

N 1.4, 2.1-2.2

N 2.4-2.5

S 1.1

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
Rd

Zubehör  
Accessories

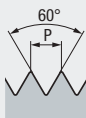

Kühlschmierstoffe siehe Seite 300 - 301

Coolant-lubricants, see page 300 - 301

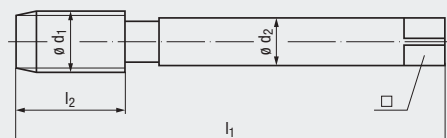
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# EG UNC (STI)

ASME B18.29.1



≈ DIN 376



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| Nenngröße<br>Nom. size | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |       |
|------------------------|------------------------|------------------|----------------|----------------|------------------|------|-------|
| <b>EG</b> 3/8          | 11,587                 | 16               | 100            | 22             | 9                | 7    | 10    |
| 7/16                   | 13,469                 | 14               | 110            | 26             | 11               | 9    | 11,6  |
| 1/2                    | 15,237                 | 13               | 110            | 27             | 12               | 9    | 13,3  |
| 9/16                   | 17,039                 | 12               | 110            | 27             | 12               | 9    | 14,9  |
| 5/8                    | 18,875                 | 11               | 125            | 30             | 14               | 11   | 16,5  |
| 3/4                    | 22,349                 | 10               | 140            | 32             | 18               | 14,5 | 19,75 |

≈ DIN 371



VA  
Stainless steel  
materials



2B  
GLT-1  
HSSE

B / 4-5  
E / 0 / P

max. 3 x d<sub>1</sub>



**P** 1.1-4.1  
**M** 1.1-4.1  
**N** 2.2

Rekord  
2B-VA  
GLT-1

C020C300.5619  
C020C300.5620  
C020C300.5621  
C020C300.5622  
C020C300.5623  
C020C300.5624

» 284

Z  
CNC-controlled  
machines



l<sub>2</sub> ≈ 10 x P

2B  
GLT-1  
HSSE

R45  
E / 1,5-2  
E / 0 / P

max. 3 x d<sub>1</sub>



**P** 1.1-3.1  
**M** 1.1-4.1  
**N** 1.4, 2.1-2.2  
**N** 2.4-2.5  
**S** 1.1

Enorm  
2-Z/E

C0513500.5619  
C0513500.5620  
C0513500.5621  
C0513500.5622  
C0513500.5623  
C0513500.5624

» 285

2B  
GLT-1  
HSSE

R45  
E / 1,5-2  
E / 0 / P

max. 3 x d<sub>1</sub>



**P** 1.1-4.1  
**M** 1.1-4.1  
**N** 1.4, 2.1-2.2  
**N** 2.4-2.5  
**S** 1.1

Enorm  
2-Z/E  
GLT-1

C051C400.5619  
C051C400.5620  
C051C400.5621  
C051C400.5622  
C051C400.5623  
C051C400.5624

» 285

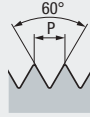


Spiralbohrer siehe Seite 11 - 70

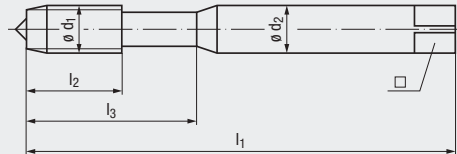
Twist drills, see page 11 - 70

# EG UNF (STI)

ASME B18.29.1



≈ DIN 371



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| Nenngröße<br>Nom. size<br>Ø d <sub>1</sub> | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |      |  | Rekord<br>1B-VA<br>GLT-1 | Enorm<br>1-AL<br>GLT-104 |
|--------------------------------------------|------------------------|------------------|----------------|----------------|----------------|------------------|-----|------|--|--------------------------|--------------------------|
| <b>EG</b> Nr. 4                            | 3,533                  | 48               | 56             | 9              | 20             | 4                | 3   | 3    |  | <b>B020C300.5633</b>     | <b>B0503G00.5633</b>     |
| Nr. 6                                      | 4,330                  | 40               | 70             | 11             | 25             | 6                | 4,9 | 3,7  |  | <b>B020C300.5635</b>     | <b>B0503G00.5635</b>     |
| Nr. 8                                      | 5,083                  | 36               | 80             | 13             | 30             | 6                | 4,9 | 4,4  |  | <b>B020C300.5636</b>     | <b>B0503G00.5636</b>     |
| Nr. 10                                     | 5,858                  | 32               | 80             | 13             | 30             | 6                | 4,9 | 5,1  |  | <b>B020C300.5637</b>     | <b>B0503G00.5637</b>     |
| 1/4                                        | 7,528                  | 28               | 90             | 17             | 35             | 8                | 6,2 | 6,6  |  | <b>B020C300.5639</b>     | <b>B0503G00.5639</b>     |
| 5/16                                       | 9,312                  | 24               | 90             | 18             | 35             | 10               | 8   | 8,25 |  | <b>B020C300.5640</b>     | <b>B0503G00.5640</b>     |
| ≈ DIN 374                                  |                        |                  |                |                |                |                  |     |      |  | 289                      |                          |

**VA**  
Stainless steel  
materials

**AL**  
Aluminium  
wrought alloys


new


l<sub>2</sub> ≈ 10 x P

2B  
GLT-1  
HSSE

B / 4-5  
E / O / P

max. 3 x d<sub>1</sub>

**P** 1.1-4.1  
**M** 1.1-4.1  
**N** 2.2

2B  
GLT-104  
HSSE

R45  
C / 2-3  
E / O

max. 2,5 x d<sub>1</sub>

**N** 1.1-1.4, 2.1

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

**EG (STI)**

SELF-LOCK

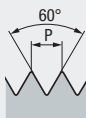
Tr, Tr-F  
Rd

Zubehör  
Accessories

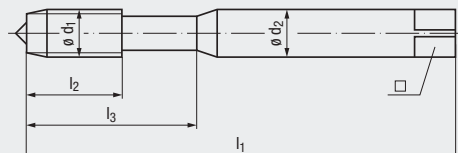

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# EG UNF (STI)

ASME B18.29.1



≈ DIN 371



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

Z  
CNC-controlled  
machines



new



2B

2B

HSSE

GLT-1

R45

HSSE

E / 1,5-2

R45

E / 0 / P

E / 1,5-2

max. 3 x d<sub>1</sub>



P 1.1-3.1

P 1.1-4.1

M 1.1-4.1

N 1.4, 2.1-2.2

N 2.4-2.5

S 1.1

Enorm  
1-Z/E

Enorm  
1-Z/E  
GLT-1

| Nenngröße<br>Nom. size | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |      |
|------------------------|------------------------|------------------|----------------|----------------|----------------|------------------|-----|------|
| <b>EG</b> Nr. 4        | 3,533                  | 48               | 56             | 7              | 20             | 4                | 3   | 3    |
| Nr. 6                  | 4,330                  | 40               | 70             | 8              | 25             | 6                | 4,9 | 3,7  |
| Nr. 8                  | 5,083                  | 36               | 80             | 8              | 30             | 6                | 4,9 | 4,4  |
| Nr. 10                 | 5,858                  | 32               | 80             | 8              | 30             | 6                | 4,9 | 5,1  |
| 1/4                    | 7,528                  | 28               | 90             | 10             | 35             | 8                | 6,2 | 6,6  |
| 5/16                   | 9,312                  | 24               | 90             | 10             | 35             | 10               | 8   | 8,25 |

≈ DIN 374

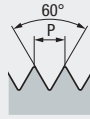


» 289

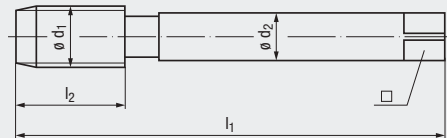
» 289

# EG UNF (STI)

ASME B18.29.1



≈ DIN 374



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

| Nenngröße<br>Nom. size | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □   |       |  | Rekord<br>2B-VA<br>GLT-1 |  | Enorm<br>2-Z/E       | Enorm<br>2-Z/E<br>GLT-1 |
|------------------------|------------------------|------------------|----------------|----------------|------------------|-----|-------|--|--------------------------|--|----------------------|-------------------------|
| <b>EG</b> 3/8          | 10,899                 | 24               | 90             | 18             | 8                | 6,2 | 9,8   |  | <b>C020C300.5641</b>     |  | <b>C0513500.5641</b> | <b>C051C400.5641</b>    |
| 7/16                   | 12,763                 | 20               | 100            | 22             | 9                | 7   | 11,5  |  | <b>C020C300.5642</b>     |  | C0513500.5642        | C051C400.5642           |
| 1/2                    | 14,352                 | 20               | 100            | 22             | 11               | 9   | 13,1  |  | <b>C020C300.5643</b>     |  | <b>C0513500.5643</b> | <b>C051C400.5643</b>    |
| 9/16                   | 16,121                 | 18               | 100            | 22             | 12               | 9   | 14,7  |  | <b>C020C300.5644</b>     |  | C0513500.5644        | C051C400.5644           |
| 5/8                    | 17,709                 | 18               | 110            | 25             | 14               | 11  | 16,25 |  | <b>C020C300.5645</b>     |  | <b>C0513500.5645</b> | <b>C051C400.5645</b>    |
| 3/4                    | 21,112                 | 16               | 125            | 25             | 16               | 12  | 19,5  |  | <b>C020C300.5646</b>     |  | <b>C0513500.5646</b> | <b>C051C400.5646</b>    |
| ≈ DIN 371              |                        |                  |                |                |                  |     |       |  | 287                      |  | 288                  | 288                     |

**VA**  
Stainless steel  
materials

2B  
GLT-1  
HSSE

B / 4-5  
E / 0 / P

max. 3 x d<sub>1</sub>

**P** 1.1-4.1  
**M** 1.1-4.1  
**N** 2.2

**Z**  
CNC-controlled  
machines

**new**

l<sub>2</sub> ≈ 10 x P

l<sub>2</sub> ≈ 10 x P

2B  
HSSE  
R45  
E / 1,5-2  
E / 0 / P

2B  
GLT-1  
HSSE  
R45  
E / 1,5-2  
E / 0 / P

max. 3 x d<sub>1</sub>

**P** 1.1-3.1  
**M** 1.1-4.1  
**N** 1.4, 2.1-2.2  
**S** 1.1

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

**EG (STI)**

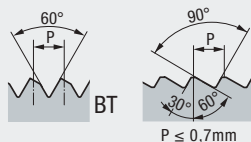
SELF-LOCK

Tr, Tr-F  
Rd

Zubehör  
Accessories


# LK-M

EMUGE-Norm · EMUGE Standard

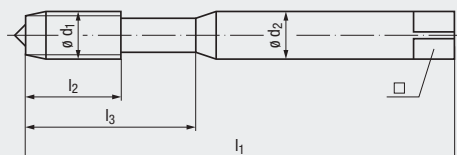
DIN  
371

### VA

Stainless steel materials



**GG**  
Cast iron



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

GLT-1

HSSE

B / 4-5

E / O / P

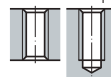
NT

HSSE

C / 2-3

F

**Gewindetiefe und Lochform**  
Thread depth and hole type

 $\max. 3 \times d_1$  $\max. 2 \times d_1$ 

Einsatzgebiete – Material  
Applications – material

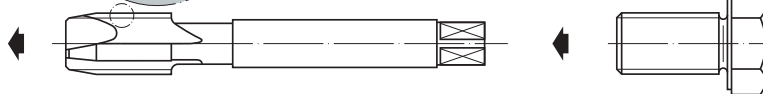
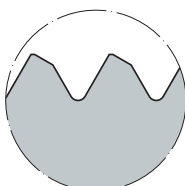
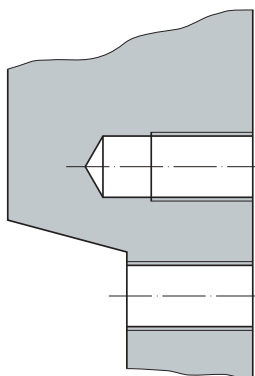
78

|          |                |
|----------|----------------|
| <b>P</b> | <b>1.1-4.1</b> |
| <b>M</b> | <b>1.1-4.1</b> |
| <b>N</b> | <b>2.2</b>     |

**K 1.1-1.2**

|                                                                                             | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □   |  | Rekord<br>1B-VA<br>GLT-1                                                                |  | Rekord<br>1A-GG<br>NT                                                                     |  |
|---------------------------------------------------------------------------------------------|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|--|
| <b>LK-M</b>                                                                                 | 3                      | 0,5     | 56             | 11             | 18             | 3,5              | 2,7 | 2,7                                                                                 |                                                                                         |  |                                                                                           |  |
|                                                                                             | 4                      | 0,7     | 63             | 13             | 21             | 4,5              | 3,4 | 3,55                                                                                |                                                                                         |  | B0102000.1048                                                                             |  |
|                                                                                             | 5                      | 0,8     | 70             | 15             | 25             | 6                | 4,9 | 4,4                                                                                 | <b>B020C300.1050</b>                                                                    |  | B0102000.1050                                                                             |  |
|                                                                                             | 6                      | 1       | 80             | 17             | 30             | 6                | 4,9 | 5,2                                                                                 | <b>B020C300.1052</b>                                                                    |  | <b>B0102000.1052</b>                                                                      |  |
|                                                                                             | 8                      | 1,25    | 90             | 20             | 35             | 8                | 6,2 | 7                                                                                   | <b>B020C300.1054</b>                                                                    |  | <b>B0102000.1054</b>                                                                      |  |
|                                                                                             | 10                     | 1,5     | 100            | 22             | 39             | 10               | 8   | 8,8                                                                                 | <b>B020C300.1056</b>                                                                    |  | <b>B0102000.1056</b>                                                                      |  |
| DIN 376  |                        |         |                |                |                |                  |     |                                                                                     |  292 |  |  292 |  |

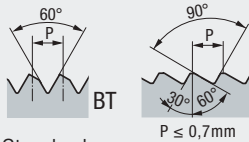
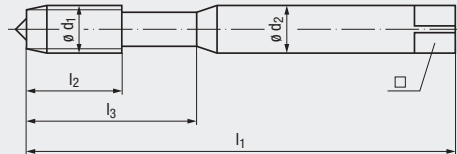
**Ausführung BT**  
Type BT



BT = Keilfläche nach hinten geneigt  
BT = Wedge ramp inclined backwards

# LK-M

EMUGE-Norm · EMUGE Standard


DIN  
371

Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

|                                                                                             | $\varnothing d_1$<br>mm | P<br>mm | $l_1$ | $l_2$ | $l_3$ | $\varnothing d_2$ | $\square$ |      |                           |  |                                                                                       |                                                                                       |
|---------------------------------------------------------------------------------------------|-------------------------|---------|-------|-------|-------|-------------------|-----------|------|---------------------------|--|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>LK-M</b>                                                                                 | 3                       | 0,5     | 56    | 6     | 18    | 3,5               | 2,7       | 2,7  | <b>Enorm 1-AL GLT-104</b> |  | <b>Enorm 1-Z/E</b>                                                                    | <b>Enorm 1-Z/E GLT-1</b>                                                              |
|                                                                                             | 4                       | 0,7     | 63    | 7     | 21    | 4,5               | 3,4       | 3,55 | <b>B0503G00.1046</b>      |  | <b>B0513500.1046</b>                                                                  | <b>B051C400.1046</b>                                                                  |
|                                                                                             | 5                       | 0,8     | 70    | 8     | 25    | 6                 | 4,9       | 4,4  | <b>B0503G00.1048</b>      |  | <b>B0513500.1048</b>                                                                  | <b>B051C400.1048</b>                                                                  |
|                                                                                             | 6                       | 1       | 80    | 10    | 30    | 6                 | 4,9       | 5,2  | <b>B0503G00.1050</b>      |  | <b>B0513500.1050</b>                                                                  | <b>B051C400.1050</b>                                                                  |
|                                                                                             | 8                       | 1,25    | 90    | 14    | 35    | 8                 | 6,2       | 7    | <b>B0503G00.1052</b>      |  | <b>B0513500.1052</b>                                                                  | <b>B051C400.1052</b>                                                                  |
|                                                                                             | 10                      | 1,5     | 100   | 16    | 39    | 10                | 8         | 8,8  | <b>B0503G00.1054</b>      |  | <b>B0513500.1054</b>                                                                  | <b>B051C400.1054</b>                                                                  |
|                                                                                             |                         |         |       |       |       |                   |           |      | <b>B0503G00.1056</b>      |  | <b>B0513500.1056</b>                                                                  | <b>B051C400.1056</b>                                                                  |
| DIN 376  |                         |         |       |       |       |                   |           |      |                           |  |  |  |

**AL**  
Aluminium  
wrought alloys


new


**Z**  
CNC-controlled  
machines


new


Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

**SELF-LOCK**

Tr, Tr-F  
Rd

Zubehör  
Accessories

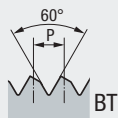
Werkzeug-Aufnahmen der Typenreihe  
Softsynchro® siehe Seite 617 - 644

Tool holders of our Softsynchro® series,  
see page 617 - 644

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# LK-M

EMUGE-Norm · EMUGE Standard

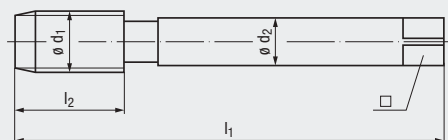


DIN  
376

VA  
Stainless steel  
materials



GG  
Cast iron



Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

GLT-1

HSSE

B / 4-5

E / O / P

max. 3 x d<sub>1</sub>



P 1.1-4.1  
M 1.1-4.1  
N 2.2

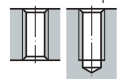
NT

HSSE

C / 2-3

E

max. 2 x d<sub>1</sub>



K 1.1-1.2

Rekord  
2B-VA  
GLT-1

C020C300.1058  
C020C300.1060  
C020C300.1062

Rekord  
2A-GG  
NT

C0102000.1058  
C0102000.1060  
C0102000.1062  
C0102000.1064

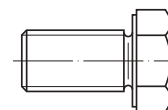
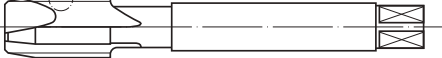
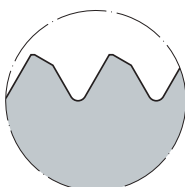
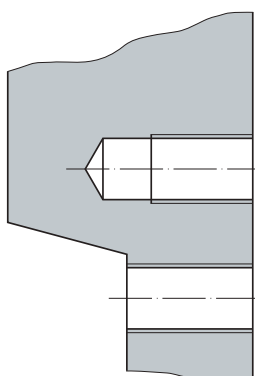
DIN 371



» 290

» 290

Ausführung BT  
Type BT

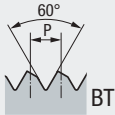


BT = Keilfläche nach hinten geneigt  
BT = Wedge ramp inclined backwards

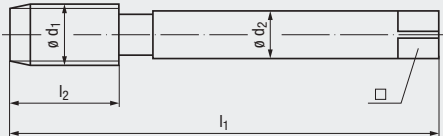


LK-M

EMUGE-Norm · EMUGE Standard



DIN  
376



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

|      | $\varnothing d_1$<br>mm | P<br>mm | $l_1$ | $l_2$ | $\varnothing d_2$ | $\square$ |      |
|------|-------------------------|---------|-------|-------|-------------------|-----------|------|
| LK-M | 12                      | 1,75    | 110   | 18    | 9                 | 7         | 10,7 |
|      | 14                      | 2       | 110   | 20    | 11                | 9         | 12,5 |
|      | 16                      | 2       | 110   | 22    | 12                | 9         | 14,5 |
|      | 20                      | 2,5     | 140   | 25    | 16                | 12        | 18   |
|      | 24                      | 3       | 160   | 30    | 18                | 14,5      | 21,5 |

DIN 371



Z  
CNC-controlled  
machines



new



|           |           |
|-----------|-----------|
| HSSE      | GLT-1     |
| R45       | HSSE      |
| E / 1,5-2 | R45       |
| E / 0 / P | E / 1,5-2 |
|           | E / 0 / P |

max. 3 x  $d_1$



|           |                |
|-----------|----------------|
| P 1.1-3.1 | P 1.1-4.1      |
|           | M 1.1-4.1      |
|           | N 1.4, 2.1-2.2 |
|           | N 2.4-2.5      |
|           | S 1.1          |

| Enorm<br>2-Z/E | Enorm<br>2-Z/E<br>GLT-1 |
|----------------|-------------------------|
| C0513500.1058  | C051C400.1058           |
| C0513500.1060  | C051C400.1060           |
| C0513500.1062  | C051C400.1062           |
| C0513500.1064  | C051C400.1064           |

» 291

» 291

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
Rd

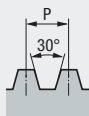
Zubehör  
Accessories



|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

# Tr

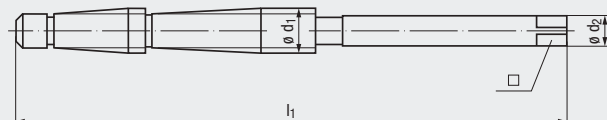
DIN 103



Nicht reversieren!  
No reversal!

2-Stufen-Ausführung

2-step design



Toleranz · Tolerance

Beschichtung · Coating

Schneidstoff · Cutting material

Technische Informationen  
Technical information



7H

HSSE

L05

0

STEEL  
Steel  
materials



7H

HSSE

LH, R05

0

Gewindetiefe und Lochform  
Thread depth and hole type

max. 2 x d<sub>1</sub> <sup>1)</sup>



Einsatzgebiete – Material  
Applications – material

» 78

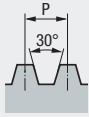
P 2.1-3.1  
K 1.1-4.2  
N 2.4-2.6

P 2.1-3.1  
K 1.1-4.2  
N 2.4-2.6

|    | ø d <sub>1</sub><br>mm |   | P<br>mm | l <sub>1</sub> | ø d <sub>2</sub> | □    |       | TRAPEZ<br>2Stuf<br>STEEL | TRAPEZ<br>2Stuf<br>STEEL-LH |
|----|------------------------|---|---------|----------------|------------------|------|-------|--------------------------|-----------------------------|
| Tr | 8                      | x | 1,5     | 105            | 6                | 4,9  | 6,6   | G0351000.7040            | G0351050.7040               |
|    | 9                      | x | 2       | 130            | 7                | 5,5  | 7,2   | G0351000.7042            | G0351050.7042               |
|    | 10                     | x | 2       | 130            | 7                | 5,5  | 8,2   | G0351000.7043            | G0351050.7043               |
|    | 10                     | x | 3       | 155            | 7                | 5,5  | 7,25  | G0351000.7044            | G0351050.7044               |
|    | 11                     | x | 3       | 155            | 8                | 6,2  | 8,25  | G0351000.7045            | G0351050.7045               |
|    | 12                     | x | 3       | 160            | 9                | 7    | 9,25  | G0351000.7046            | G0351050.7046               |
|    | 14                     | x | 3       | 170            | 10               | 8    | 11,25 | G0351000.7047            | G0351050.7047               |
|    | 14                     | x | 4       | 195            | 10               | 8    | 10,25 | G0351000.7048            | G0351050.7048               |
|    | 16                     | x | 4       | 225            | 12               | 9    | 12,25 | G0351000.7051            | G0351050.7051               |
|    | 18                     | x | 4       | 225            | 14               | 11   | 14,25 | G0351000.7052            | G0351050.7052               |
|    | 20                     | x | 4       | 225            | 16               | 12   | 16,25 | G0351000.7053            | G0351050.7053               |
|    | 22                     | x | 5       | 260            | 16               | 12   | 17,25 | G0351000.7054            | G0351050.7054               |
|    | 24                     | x | 5       | 285            | 18               | 14,5 | 19,25 | G0351000.7055            | G0351050.7055               |
|    | 26                     | x | 5       | 285            | 20               | 16   | 21,25 | G0351000.7057            | G0351050.7057               |
|    | 28                     | x | 5       | 300            | 22               | 18   | 23,25 | G0351000.7058            | G0351050.7058               |
|    | 30                     | x | 6       | 335            | 22               | 18   | 24,25 | G0351000.7059            | G0351050.7059               |
|    | 32                     | x | 6       | 335            | 25               | 20   | 26,25 | G0351000.7060            | G0351050.7060               |
|    | 34                     | x | 6       | 350            | 28               | 22   | 28,25 | G0351000.7061            | G0351050.7061               |
|    | 36                     | x | 6       | 350            | 28               | 22   | 30,25 | G0351000.7062            | G0351050.7062               |
|    | 38                     | x | 7       | 385            | 28               | 22   | 31,5  | G0351000.7063            | G0351050.7063               |
|    | 40                     | x | 7       | 400            | 32               | 24   | 33,5  | G0351000.7064            | G0351050.7064               |
|    | 42                     | x | 7       | 400            | 32               | 24   | 35,5  | G0351000.7065            | G0351050.7065               |
|    | 44                     | x | 7       | 410            | 36               | 29   | 37,5  | G0351000.7066            | G0351050.7066               |
|    | 46                     | x | 8       | 440            | 36               | 29   | 38,5  | G0351000.7067            | G0351050.7067               |
|    | 48                     | x | 8       | 455            | 40               | 32   | 40,5  | G0351000.7068            | G0351050.7068               |
|    | 50                     | x | 8       | 470            | 40               | 32   | 42,5  | G0351000.7069            | G0351050.7069               |
|    | 52                     | x | 8       | 470            | 40               | 32   | 44,5  | G0351000.7070            | G0351050.7070               |

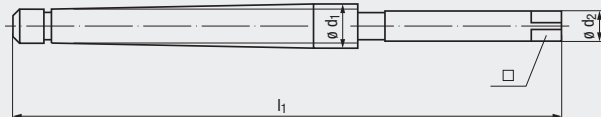
**Tr**

DIN 103



NC

Muss mit zwangsläufiger Steigung geschnitten werden  
Positive feed control is necessary



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

**VA**  
Stainless steel  
materials



7H

7H

NT

NT

HSSE

HSSE

L25

LH, R25

0

0

max. 1,5 x d<sub>1</sub>

**P** 2.1-3.1  
**K** 1.1-4.2  
**N** 2.4-2.6

**P** 2.1-3.1  
**K** 1.1-4.2  
**N** 2.4-2.6

|           | ø d <sub>1</sub><br>mm |   | P<br>mm | l <sub>1</sub> | ø d <sub>2</sub> | □    |       | TRAPEZ<br>AM-VA<br>NT | TRAPEZ<br>AM-VA-LH<br>NT |  |  |
|-----------|------------------------|---|---------|----------------|------------------|------|-------|-----------------------|--------------------------|--|--|
| <b>Tr</b> | 8                      | x | 1,5     | 90             | 6                | 4,9  | 6,6   | G0303000.7040         | G0303050.7040            |  |  |
|           | 9                      | x | 2       | 110            | 7                | 5,5  | 7,2   | G0303000.7042         | G0303050.7042            |  |  |
|           | 10                     | x | 2       | 110            | 7                | 5,5  | 8,2   | G0303000.7043         | G0303050.7043            |  |  |
|           | 10                     | x | 3       | 130            | 7                | 5,5  | 7,25  | G0303000.7044         | G0303050.7044            |  |  |
|           | 11                     | x | 3       | 130            | 8                | 6,2  | 8,25  | G0303000.7045         | G0303050.7045            |  |  |
|           | 12                     | x | 3       | 140            | 9                | 7    | 9,25  | G0303000.7046         | G0303050.7046            |  |  |
|           | 14                     | x | 3       | 145            | 10               | 8    | 11,25 | G0303000.7047         | G0303050.7047            |  |  |
|           | 14                     | x | 4       | 165            | 10               | 8    | 10,25 | G0303000.7048         | G0303050.7048            |  |  |
|           | 16                     | x | 4       | 190            | 12               | 9    | 12,25 | G0303000.7051         | G0303050.7051            |  |  |
|           | 18                     | x | 4       | 195            | 14               | 11   | 14,25 | G0303000.7052         | G0303050.7052            |  |  |
|           | 20                     | x | 4       | 195            | 16               | 12   | 16,25 | G0303000.7053         | G0303050.7053            |  |  |
|           | 22                     | x | 5       | 220            | 16               | 12   | 17,25 | G0303000.7054         | G0303050.7054            |  |  |
|           | 24                     | x | 5       | 245            | 18               | 14,5 | 19,25 | G0303000.7055         | G0303050.7055            |  |  |
|           | 26                     | x | 5       | 245            | 20               | 16   | 21,25 | G0303000.7057         | G0303050.7057            |  |  |
|           | 28                     | x | 5       | 260            | 22               | 18   | 23,25 | G0303000.7058         | G0303050.7058            |  |  |
|           | 30                     | x | 6       | 285            | 22               | 18   | 24,25 | G0303000.7059         | G0303050.7059            |  |  |

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

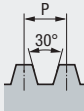
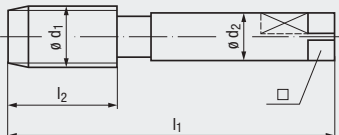
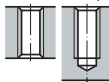
MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

| <div><div>Tr</div><div></div><div>DIN 103</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |                |                |                  |     |                                                                                     | <div>≈ DIN 352</div>                                                                                                                                                                        | <div>MS<br/>Copper-zinc alloys</div> <div></div> <div></div> |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------|----------------|------------------|-----|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|------------------|---|-------------------------------------------------------------------------------------|-------------------------|------|-------|----|----|-----------------|-----|-----|---------------|---|-----|----|----|-----------------|-----|-----|---------------|---|-----|----|----|-----------------|-----|-----|---------------|----|-----|----|----|-----------------|-----|-----|---------------|----|-----|----|----|-----------------|-----|------|---------------|----|-----|----|----|---|---|------|---------------|----|-----|----|----|---|---|------|---------------|----|-----|----|----|------------------|---|-------|---------------|----|-----|----|----|------------------|---|-------|---------------|----|-----|----|----|----|---|-------|---------------|----|-----|----|----|------------------|---|-------|---------------|----|-----|----|----|------------------|----|-------|---------------|--|--|--|--|--|
| <div>Speziell für Drehautomaten<br/>Specially made for automatic lathes</div> <div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |                |                |                  |     |                                                                                     | <div>Toleranz · Tolerance<br/>Beschichtung · Coating<br/>Schneidstoff · Cutting material</div> <div></div> | <div>7H</div> <div>HSSE</div> <div>E / 1,5-2</div> <div>0</div>                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| <div>Technische Informationen<br/>Technical information</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                |                |                  |     |                                                                                     |                                                                                                                                                                                             |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| <div>Gewindetiefe und Lochform<br/>Thread depth and hole type</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |                |                |                  |     |                                                                                     | <div>max. 1 x d<sub>1</sub></div> <div></div>                                                            |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| <div>Einsatzgebiete – Material<br/>Applications – material</div> <div>»  78</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |         |                |                |                  |     |                                                                                     | <div>N 2.3</div>                                                                                                                                                                            |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| <table><thead><tr><th>ø d<sub>1</sub><br/>mm</th><th>P<br/>mm</th><th>l<sub>1</sub></th><th>l<sub>2</sub></th><th>ø d<sub>2</sub></th><th>□</th><th></th><th>TRAPEZ<br/>AUT-A<br/>MS-R</th></tr></thead><tbody><tr><td>Tr 8</td><td>x 1,5</td><td>70</td><td>22</td><td>8 <sup>1)</sup></td><td>6,2</td><td>6,6</td><td>G0442500.7040</td></tr><tr><td>8</td><td>x 2</td><td>70</td><td>22</td><td>8 <sup>1)</sup></td><td>6,2</td><td>6,2</td><td>G0442500.7041</td></tr><tr><td>9</td><td>x 2</td><td>70</td><td>22</td><td>8 <sup>1)</sup></td><td>6,2</td><td>7,2</td><td>G0442500.7042</td></tr><tr><td>10</td><td>x 2</td><td>70</td><td>22</td><td>8 <sup>1)</sup></td><td>6,2</td><td>8,2</td><td>G0442500.7043</td></tr><tr><td>10</td><td>x 3</td><td>70</td><td>22</td><td>8 <sup>1)</sup></td><td>6,2</td><td>7,25</td><td>G0442500.7044</td></tr><tr><td>11</td><td>x 3</td><td>75</td><td>24</td><td>9</td><td>7</td><td>8,25</td><td>G0442500.7045</td></tr><tr><td>12</td><td>x 3</td><td>75</td><td>25</td><td>9</td><td>7</td><td>9,25</td><td>G0442500.7046</td></tr><tr><td>14</td><td>x 3</td><td>80</td><td>26</td><td>10 <sup>1)</sup></td><td>8</td><td>11,25</td><td>G0442500.7047</td></tr><tr><td>14</td><td>x 4</td><td>80</td><td>26</td><td>10 <sup>1)</sup></td><td>8</td><td>10,25</td><td>G0442500.7048</td></tr><tr><td>16</td><td>x 4</td><td>80</td><td>27</td><td>12</td><td>9</td><td>12,25</td><td>G0442500.7051</td></tr><tr><td>18</td><td>x 4</td><td>95</td><td>32</td><td>12 <sup>1)</sup></td><td>9</td><td>14,25</td><td>G0442500.7052</td></tr><tr><td>20</td><td>x 4</td><td>95</td><td>32</td><td>15 <sup>1)</sup></td><td>12</td><td>16,25</td><td>G0442500.7053</td></tr></tbody></table> |         |                |                |                  |     |                                                                                     | ø d <sub>1</sub><br>mm                                                                                                                                                                      | P<br>mm                                                                                                                                                                                                                        | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □ |  | TRAPEZ<br>AUT-A<br>MS-R | Tr 8 | x 1,5 | 70 | 22 | 8 <sup>1)</sup> | 6,2 | 6,6 | G0442500.7040 | 8 | x 2 | 70 | 22 | 8 <sup>1)</sup> | 6,2 | 6,2 | G0442500.7041 | 9 | x 2 | 70 | 22 | 8 <sup>1)</sup> | 6,2 | 7,2 | G0442500.7042 | 10 | x 2 | 70 | 22 | 8 <sup>1)</sup> | 6,2 | 8,2 | G0442500.7043 | 10 | x 3 | 70 | 22 | 8 <sup>1)</sup> | 6,2 | 7,25 | G0442500.7044 | 11 | x 3 | 75 | 24 | 9 | 7 | 8,25 | G0442500.7045 | 12 | x 3 | 75 | 25 | 9 | 7 | 9,25 | G0442500.7046 | 14 | x 3 | 80 | 26 | 10 <sup>1)</sup> | 8 | 11,25 | G0442500.7047 | 14 | x 4 | 80 | 26 | 10 <sup>1)</sup> | 8 | 10,25 | G0442500.7048 | 16 | x 4 | 80 | 27 | 12 | 9 | 12,25 | G0442500.7051 | 18 | x 4 | 95 | 32 | 12 <sup>1)</sup> | 9 | 14,25 | G0442500.7052 | 20 | x 4 | 95 | 32 | 15 <sup>1)</sup> | 12 | 16,25 | G0442500.7053 |  |  |  |  |  |
| ø d <sub>1</sub><br>mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □   |  | TRAPEZ<br>AUT-A<br>MS-R                                                                                                                                                                     |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| Tr 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | x 1,5   | 70             | 22             | 8 <sup>1)</sup>  | 6,2 | 6,6                                                                                 | G0442500.7040                                                                                                                                                                               |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | x 2     | 70             | 22             | 8 <sup>1)</sup>  | 6,2 | 6,2                                                                                 | G0442500.7041                                                                                                                                                                               |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | x 2     | 70             | 22             | 8 <sup>1)</sup>  | 6,2 | 7,2                                                                                 | G0442500.7042                                                                                                                                                                               |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | x 2     | 70             | 22             | 8 <sup>1)</sup>  | 6,2 | 8,2                                                                                 | G0442500.7043                                                                                                                                                                               |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | x 3     | 70             | 22             | 8 <sup>1)</sup>  | 6,2 | 7,25                                                                                | G0442500.7044                                                                                                                                                                               |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | x 3     | 75             | 24             | 9                | 7   | 8,25                                                                                | G0442500.7045                                                                                                                                                                               |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | x 3     | 75             | 25             | 9                | 7   | 9,25                                                                                | G0442500.7046                                                                                                                                                                               |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | x 3     | 80             | 26             | 10 <sup>1)</sup> | 8   | 11,25                                                                               | G0442500.7047                                                                                                                                                                               |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | x 4     | 80             | 26             | 10 <sup>1)</sup> | 8   | 10,25                                                                               | G0442500.7048                                                                                                                                                                               |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | x 4     | 80             | 27             | 12               | 9   | 12,25                                                                               | G0442500.7051                                                                                                                                                                               |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | x 4     | 95             | 32             | 12 <sup>1)</sup> | 9   | 14,25                                                                               | G0442500.7052                                                                                                                                                                               |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |
| 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | x 4     | 95             | 32             | 15 <sup>1)</sup> | 12  | 16,25                                                                               | G0442500.7053                                                                                                                                                                               |                                                                                                                                                                                                                                |                |                |                  |   |                                                                                     |                         |      |       |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |   |     |    |    |                 |     |     |               |    |     |    |    |                 |     |     |               |    |     |    |    |                 |     |      |               |    |     |    |    |   |   |      |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |    |   |       |               |    |     |    |    |                  |   |       |               |    |     |    |    |                  |    |       |               |  |  |  |  |  |

<sup>1)</sup> Spezieller AUT-Schaft  
Special shank for "AUT" taps

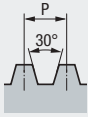


Schneideisen für Trapez-Gewinde  
siehe Seite 538 - 539

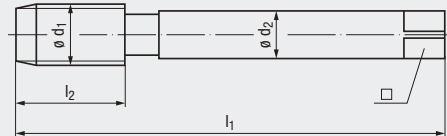
Dies for trapezoidal threads,  
see page 538 - 539

**Tr-F**

DIN 103



≈ DIN  
374/376



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

**STEEL**  
Steel  
materials



7H

HSSE

L15

0

max. 2 x d<sub>1</sub> <sup>2)</sup>



**P** 1.1-2.1

**P** 1.1-2.1

**VA**  
Stainless steel  
materials



3)

7H

NT

HSSE

L25

0

max. 2 x d<sub>1</sub>



**P** 1.1-3.1

**K** 2.1-4.2

**N** 2.4-2.6

| ø d <sub>1</sub><br>mm |   | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |       | TRAPEZ<br>Rekord<br>2C-STEEL | TRAPEZ<br>Rekord<br>2C-STEEL-LH | TRAPEZ<br>Rekord<br>2C-VA-NT |
|------------------------|---|---------|----------------|----------------|------------------|------|-------|------------------------------|---------------------------------|------------------------------|
| <b>Tr</b> 9            | x | 1,5     | 100            | 22             | 7                | 5,5  | 7,6   | G0321000.7111                | G0321050.7111                   | G0323000.7111                |
| 10                     | x | 1,5     | 100            | 22             | 7                | 5,5  | 8,6   | G0321000.7112                | G0321050.7112                   | G0323000.7112                |
| 11                     | x | 2       | 100            | 22             | 8                | 6,2  | 9,2   | G0321000.7128                | G0321050.7128                   | G0323000.7128                |
| 12                     | x | 2       | 110            | 25             | 9                | 7    | 10,2  | G0321000.7129                | G0321050.7129                   | G0323000.7129                |
| 14                     | x | 2       | 110            | 26             | 11               | 9    | 12,2  | G0321000.7130                | G0321050.7130                   | G0323000.7130                |
| 16                     | x | 2       | 110            | 27             | 12               | 9    | 14,2  | G0321000.7132                | G0321050.7132                   | G0323000.7132                |
| 18                     | x | 2       | 125            | 27             | 14               | 11   | 16,2  | G0321000.7133                | G0321050.7133                   | G0323000.7133                |
| 20                     | x | 2       | 140            | 27             | 16               | 12   | 18,2  | G0321000.7134                | G0321050.7134                   | G0323000.7134                |
| 22                     | x | 3       | 160            | 34             | 18               | 14,5 | 19,25 | G0321000.7156                | G0321050.7156                   | G0323000.7156                |
| 24                     | x | 3       | 160            | 36             | 18               | 14,5 | 21,25 | G0321000.7157                | G0321050.7157                   | G0323000.7157                |
| 26                     | x | 3       | 160            | 36             | 20               | 16   | 23,25 | G0321000.7159                | G0321050.7159                   | G0323000.7159                |
| 28                     | x | 3       | 180            | 40             | 22               | 18   | 25,25 | G0321000.7160                | G0321050.7160                   | G0323000.7160                |
| 30                     | x | 3       | 180            | 40             | 22               | 18   | 27,25 | G0321000.7161                | G0321050.7161                   | G0323000.7161                |

<sup>2)</sup> Bei entsprechender Einspannlänge bis ca. 2,5 x d<sub>1</sub>  
With sufficient clamping length up to approx. 2.5 x d<sub>1</sub>

<sup>3)</sup> Muss mit zwangsläufiger Steigung geschnitten werden  
Positive feed control is necessary

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

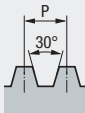
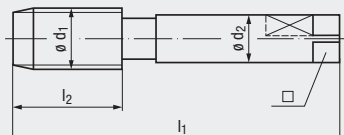
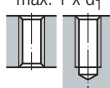
SELF-LOCK

Tr, Tr-F  
Rd

Zubehör  
Accessories



|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

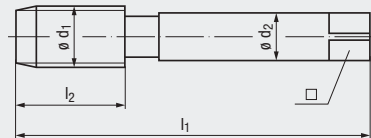
| <div>Tr-F</div> <div>DIN 103</div> <div></div> <div><div>≈ DIN 352</div><div><div>MS</div><div>Copper-zinc alloys</div><div></div><div></div></div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |                |                |                  |                  |                                                                                     |       |                                                                                                                                  |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------|----------------|------------------|------------------|-------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------|---------|----------------|----------------|------------------|---|-------------------------------------------------------------------------------------|--|----|---|-------|----|----|-----------------|-----|-----|---------------|----|-------|----|----|-----------------|-----|-----|---------------|----|-----|----|----|---|---|-----|---------------|----|-----|----|----|---|---|------|---------------|----|-----|----|----|------------------|---|------|---------------|----|-----|----|----|----|---|------|---------------|----|-----|----|----|------------------|---|------|---------------|----|-----|----|----|------------------|----|------|---------------|----|-----|-----|----|------------------|----|-------|---------------|----|-----|-----|----|----|------|-------|---------------|----|-----|-----|----|----|------|-------|---------------|----|-----|-----|----|------------------|------|-------|---------------|----|-----|-----|----|------------------|------|-------|---------------|--------------------------------------|--|--|
| <div>Speziell für Drehautomaten</div> <div>Specially made for automatic lathes</div> <div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         |                |                |                  |                  |                                                                                     |       |                                                                                                                                  |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
| <div>Technische Informationen</div> <div>Technical information</div> <div><div>Toleranz · Tolerance</div><div>Beschichtung · Coating</div><div>Schneidstoff · Cutting material</div></div> <div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |         |                |                |                  |                  |                                                                                     |       | <div>7H</div>                                                                                                                    |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                |                |                  |                  |                                                                                     |       | <div>HSSE</div>                                                                                                                  |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                |                |                  |                  |                                                                                     |       | <div>E / 1,5-2</div>                                                                                                             |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                |                |                  |                  |                                                                                     |       | <div>0</div>                                                                                                                     |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
| <div>Gewindetiefe und Lochform</div> <div>Thread depth and hole type</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         |                |                |                  |                  |                                                                                     |       | <div>max. 1 x d<sub>1</sub></div> <div></div> |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
| <div>Einsatzgebiete – Material</div> <div>Applications – material</div> <div>»  78</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |                |                |                  |                  |                                                                                     |       | <div>N 2.3</div>                                                                                                                 |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
| <table><tr><th>ø d<sub>1</sub><br/>mm</th><th>P<br/>mm</th><th>l<sub>1</sub></th><th>l<sub>2</sub></th><th>ø d<sub>2</sub></th><th>□</th><th></th><th></th></tr><tr><td rowspan="15">Tr</td><td>9</td><td>x 1,5</td><td>70</td><td>22</td><td>8 <sup>1)</sup></td><td>6,2</td><td>7,6</td><td>G0442500.7111</td></tr><tr><td>10</td><td>x 1,5</td><td>70</td><td>22</td><td>8 <sup>1)</sup></td><td>6,2</td><td>8,6</td><td>G0442500.7112</td></tr><tr><td>11</td><td>x 2</td><td>75</td><td>24</td><td>9</td><td>7</td><td>9,2</td><td>G0442500.7128</td></tr><tr><td>12</td><td>x 2</td><td>75</td><td>25</td><td>9</td><td>7</td><td>10,2</td><td>G0442500.7129</td></tr><tr><td>14</td><td>x 2</td><td>80</td><td>26</td><td>10 <sup>1)</sup></td><td>8</td><td>12,2</td><td>G0442500.7130</td></tr><tr><td>16</td><td>x 2</td><td>80</td><td>27</td><td>12</td><td>9</td><td>14,2</td><td>G0442500.7132</td></tr><tr><td>18</td><td>x 2</td><td>80</td><td>22</td><td>12 <sup>1)</sup></td><td>9</td><td>16,2</td><td>G0442500.7133</td></tr><tr><td>20</td><td>x 2</td><td>80</td><td>22</td><td>15 <sup>1)</sup></td><td>12</td><td>18,2</td><td>G0442500.7134</td></tr><tr><td>22</td><td>x 3</td><td>100</td><td>32</td><td>15 <sup>1)</sup></td><td>12</td><td>19,25</td><td>G0442500.7156</td></tr><tr><td>24</td><td>x 3</td><td>110</td><td>36</td><td>18</td><td>14,5</td><td>21,25</td><td>G0442500.7157</td></tr><tr><td>26</td><td>x 3</td><td>110</td><td>36</td><td>18</td><td>14,5</td><td>23,25</td><td>G0442500.7159</td></tr><tr><td>28</td><td>x 3</td><td>125</td><td>36</td><td>18 <sup>1)</sup></td><td>14,5</td><td>25,25</td><td>G0442500.7160</td></tr><tr><td>30</td><td>x 3</td><td>125</td><td>34</td><td>18 <sup>1)</sup></td><td>14,5</td><td>27,25</td><td>G0442500.7161</td></tr></table> |         |                |                |                  |                  |                                                                                     |       | ø d <sub>1</sub><br>mm                                                                                                           | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □ |  |  | Tr | 9 | x 1,5 | 70 | 22 | 8 <sup>1)</sup> | 6,2 | 7,6 | G0442500.7111 | 10 | x 1,5 | 70 | 22 | 8 <sup>1)</sup> | 6,2 | 8,6 | G0442500.7112 | 11 | x 2 | 75 | 24 | 9 | 7 | 9,2 | G0442500.7128 | 12 | x 2 | 75 | 25 | 9 | 7 | 10,2 | G0442500.7129 | 14 | x 2 | 80 | 26 | 10 <sup>1)</sup> | 8 | 12,2 | G0442500.7130 | 16 | x 2 | 80 | 27 | 12 | 9 | 14,2 | G0442500.7132 | 18 | x 2 | 80 | 22 | 12 <sup>1)</sup> | 9 | 16,2 | G0442500.7133 | 20 | x 2 | 80 | 22 | 15 <sup>1)</sup> | 12 | 18,2 | G0442500.7134 | 22 | x 3 | 100 | 32 | 15 <sup>1)</sup> | 12 | 19,25 | G0442500.7156 | 24 | x 3 | 110 | 36 | 18 | 14,5 | 21,25 | G0442500.7157 | 26 | x 3 | 110 | 36 | 18 | 14,5 | 23,25 | G0442500.7159 | 28 | x 3 | 125 | 36 | 18 <sup>1)</sup> | 14,5 | 25,25 | G0442500.7160 | 30 | x 3 | 125 | 34 | 18 <sup>1)</sup> | 14,5 | 27,25 | G0442500.7161 | <div>TRAPEZ<br/>AUT-A<br/>MS-R</div> |  |  |
| ø d <sub>1</sub><br>mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □                |  |       |                                                                                                                                  |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
| Tr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9       | x 1,5          | 70             | 22               | 8 <sup>1)</sup>  | 6,2                                                                                 | 7,6   | G0442500.7111                                                                                                                    |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 10      | x 1,5          | 70             | 22               | 8 <sup>1)</sup>  | 6,2                                                                                 | 8,6   | G0442500.7112                                                                                                                    |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 11      | x 2            | 75             | 24               | 9                | 7                                                                                   | 9,2   | G0442500.7128                                                                                                                    |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 12      | x 2            | 75             | 25               | 9                | 7                                                                                   | 10,2  | G0442500.7129                                                                                                                    |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 14      | x 2            | 80             | 26               | 10 <sup>1)</sup> | 8                                                                                   | 12,2  | G0442500.7130                                                                                                                    |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 16      | x 2            | 80             | 27               | 12               | 9                                                                                   | 14,2  | G0442500.7132                                                                                                                    |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 18      | x 2            | 80             | 22               | 12 <sup>1)</sup> | 9                                                                                   | 16,2  | G0442500.7133                                                                                                                    |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 20      | x 2            | 80             | 22               | 15 <sup>1)</sup> | 12                                                                                  | 18,2  | G0442500.7134                                                                                                                    |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 22      | x 3            | 100            | 32               | 15 <sup>1)</sup> | 12                                                                                  | 19,25 | G0442500.7156                                                                                                                    |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 24      | x 3            | 110            | 36               | 18               | 14,5                                                                                | 21,25 | G0442500.7157                                                                                                                    |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 26      | x 3            | 110            | 36               | 18               | 14,5                                                                                | 23,25 | G0442500.7159                                                                                                                    |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 28      | x 3            | 125            | 36               | 18 <sup>1)</sup> | 14,5                                                                                | 25,25 | G0442500.7160                                                                                                                    |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 30      | x 3            | 125            | 34               | 18 <sup>1)</sup> | 14,5                                                                                | 27,25 | G0442500.7161                                                                                                                    |         |                |                |                  |   |                                                                                     |  |    |   |       |    |    |                 |     |     |               |    |       |    |    |                 |     |     |               |    |     |    |    |   |   |     |               |    |     |    |    |   |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |    |   |      |               |    |     |    |    |                  |   |      |               |    |     |    |    |                  |    |      |               |    |     |     |    |                  |    |       |               |    |     |     |    |    |      |       |               |    |     |     |    |    |      |       |               |    |     |     |    |                  |      |       |               |    |     |     |    |                  |      |       |               |                                      |  |  |

1) Spezieller AUT-Schaft  
Special shank for "AUT" taps



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STEEL  
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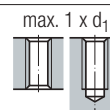
Toleranz · Tolerance  
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Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 78

K 1.1-4.2  
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|    | Ø d <sub>1</sub><br>mm |   | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |      |               |  |
|----|------------------------|---|------------------|----------------|----------------|------------------|------|------|---------------|--|
| Rd | 8                      | x | 10               | 70             | 22             | 8                | 6,2  | 6    | G0401000.7287 |  |
|    | 9                      | x | 10               | 70             | 22             | 8                | 6,2  | 7    | G0401000.7288 |  |
|    | 10                     | x | 10               | 70             | 22             | 8                | 6,2  | 8    | G0401000.7289 |  |
|    | 11                     | x | 10               | 70             | 22             | 8                | 6,2  | 9    | G0401000.7290 |  |
|    | 12                     | x | 10               | 75             | 25             | 9                | 7    | 10   | G0401000.7291 |  |
|    | 14                     | x | 8                | 80             | 26             | 11               | 9    | 11,5 | G0401000.7293 |  |
|    | 16                     | x | 8                | 80             | 27             | 12               | 9    | 13,5 | G0401000.7294 |  |
|    | 18                     | x | 8                | 95             | 32             | 14               | 11   | 15,5 | G0401000.7295 |  |
|    | 20                     | x | 8                | 95             | 32             | 16               | 12   | 17,5 | G0401000.7296 |  |
|    | 22                     | x | 8                | 100            | 32             | 18               | 14,5 | 19,5 | G0401000.7297 |  |
|    | 24                     | x | 8                | 110            | 36             | 18               | 14,5 | 21,5 | G0401000.7298 |  |
|    | 26                     | x | 8                | 110            | 36             | 20               | 16   | 23,5 | G0401000.7299 |  |
|    | 28                     | x | 8                | 125            | 34             | 22               | 18   | 25,5 | G0401000.7300 |  |
|    | 30                     | x | 8                | 125            | 34             | 22               | 18   | 27,5 | G0401000.7301 |  |

Product  
Finder

V<sub>c</sub>

M

MF

UNC  
UN-8

UNF  
UNEF

G, Rp  
NPSM, NPSF

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
Rd

Zubehör  
Accessories

Gewindelehren  
siehe Seite 541 - 594

Thread gauges,  
see page 541 - 594

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

### Gewindeschneidöle und -pasten

Mit seinen chlorfreien Gewindeschneidölen und -pasten erbringt EMUGE-FRANKEN einen weiteren Beitrag zum Thema Umweltschutz.

Die Kühlschmierstoffe sind überwiegend kennzeichnungsfrei und erfüllen alle Anforderungen der aktuellen EU-Verordnung zur Registrierung, Bewertung, Zulassung und Beschränkung chemischer Stoffe (REACH).

Besondere Bedeutung sollte bei der Herstellung von Gewinden dem Kühlschmierstoff zugeordnet werden. EMUGE-Kühlschmierstoffe sind speziell auf den zu bearbeitenden Werkstoff bzw. auf die vorhandenen Arbeitsbedingungen abgestimmt.

### Thread cutting oils and pastes

EMUGE-FRANKEN makes another contribution to the protection of the environment with its chlorine-free cutting oils and pastes.

Most coolant-lubricants do not require a hazard classification and meet all the requirements of the current EU Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

In the production of threads, special attention should always be paid to the use of coolant-lubricant. EMUGE coolant-lubricants are specially designed for the materials they are recommended for, and for typical modern work conditions as known from our experience.

|                                                                                     |                                              | Gewindeschneidöle, chlorfrei                                                                                                                                                                                            | Thread cutting oils, chlorine-free                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <div>P M</div> <div>K N</div> <div>S H</div> | <b>Für Stahlwerkstoffe</b><br>Kann sowohl für Pinsel- als auch für Umlaufschmierung verwendet werden.<br>Für die Bearbeitung von Buntmetallen nur bedingt geeignet!                                                     | <b>For steel materials</b><br>Can be used for brush and circulation lubrication.<br>Limited suitability for the machining of non-ferrous materials!                                                            |
|   | <div>P M</div> <div>K N</div> <div>S H</div> | <b>Für Gusswerkstoffe</b><br>Kann sowohl für Pinsel- als auch für Umlaufschmierung verwendet werden.                                                                                                                    | <b>For cast materials</b><br>Can be used for brush and circulation lubrication.                                                                                                                                |
|  | <div>P M</div> <div>K N</div> <div>S H</div> | <b>Für nahezu alle Werkstoffe</b><br>Als Emulsion im Mischungsverhältnis 1:8 einzusetzen. Kann auch im unverdünnten Zustand verwendet werden.<br>Für die Bearbeitung von Buntmetallen nur bedingt geeignet!             | <b>For almost all materials</b><br>For use as emulsion in a mixing ratio of 1:8.<br>Can be used in undiluted state also.<br>Limited suitability for the machining of non-ferrous materials!                    |
|  | <div>P M</div> <div>K N</div> <div>S H</div> | <b>Für Nichteisen-Werkstoffe</b><br>Kann sowohl für Pinsel- als auch für Umlaufschmierung verwendet werden.                                                                                                             | <b>For non ferrous materials</b><br>Can be used for brush and circulation lubrication.                                                                                                                         |
|  | <div>P M</div> <div>K N</div> <div>S H</div> | <b>Für schwer zerspanbare Werkstoffe</b><br>Zum Gewindeformen hervorragend geeignet.<br>Kann sowohl für Pinsel- als auch für Umlaufschmierung verwendet werden.<br>Für die Bearbeitung von Buntmetallen nicht geeignet! | <b>For difficult materials</b><br>Perfectly suitable for the cold forming of threads.<br>Can be used for brush and circulation lubrication.<br>Limited suitability for the machining of non-ferrous materials! |

|                                                                                     |                                              | Gewindeschneidpaste, chlorfrei                                                                                                                                                                                                                                                                             | Thread cutting paste, chlorine-free                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <div>P M</div> <div>K N</div> <div>S H</div> | <b>Für schwer zerspanbare Werkstoffe</b><br>Zum Gewindeformen hervorragend geeignet.<br>Besonders vorteilhaft bei waagrechter Bearbeitung, großen Abmessungen und Durchgangslochgewinden.<br>Kann nur für Pinselschmierung verwendet werden.<br>Für die Bearbeitung von Buntmetallen nur bedingt geeignet! | <b>For difficult materials</b><br>Perfectly suitable for the cold forming of threads.<br>Especially useful in horizontal machining, with large thread sizes and through hole threads.<br>To be used only for brush lubrication.<br>Limited suitability for the machining of non-ferrous materials! |



| Nr.<br>No.                                                                        | Gebinde<br>Container size |              |
|-----------------------------------------------------------------------------------|---------------------------|--------------|
|  | 1 kg                      | FZ191015.01  |
|                                                                                   | 5 kg                      | FZ191015.05  |
|                                                                                   | 10 kg                     | FZ191015.10  |
|                                                                                   | 20 kg                     | FZ191015.20  |
|  | 1 kg                      | FZ191115.01  |
|                                                                                   | 5 kg                      | FZ191115.05  |
|                                                                                   | 10 kg                     | FZ191115.10  |
|                                                                                   | 20 kg                     | FZ191115.20  |
|  | 1 kg                      | FZ191215.01  |
|                                                                                   | 5 kg                      | FZ191215.05  |
|                                                                                   | 10 kg                     | FZ191215.10  |
|                                                                                   | 20 kg                     | FZ191215.20  |
|  | 1 kg                      | FZ191315.01  |
|                                                                                   | 5 kg                      | FZ191315.05  |
|                                                                                   | 10 kg                     | FZ191315.10  |
|                                                                                   | 20 kg                     | FZ191315.20  |
|  | 1 kg                      | FZ191415.01  |
|                                                                                   | 5 kg                      | FZ191415.05  |
|                                                                                   | 10 kg                     | FZ191415.10  |
|                                                                                   | 20 kg                     | FZ191415.20  |
|  | 0,26 kg <sup>1)</sup>     | FZ191515.003 |
|                                                                                   | 0,45 kg                   | FZ191515.005 |
|                                                                                   | 4,5 kg                    | FZ191515.05  |
|                                                                                   |                           |              |



<sup>1)</sup> 310 ml Kartusche für den Einsatz in Kartuschenpresse  
310 ml Cartridge for use in cartridge press

Product  
FinderV<sub>c</sub>

M

MF

UNC

UN-8

UNF

UNEF

G, Rp

NPSM, NPSF

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

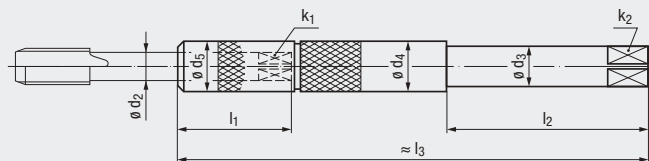
Rd

Zubehör

Accessories



### Kurze Ausführung Short design



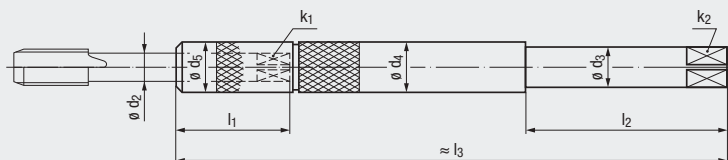
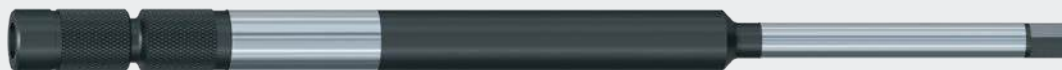
Für den Einsatz auf CNC-Maschinen und herkömmlichen Gewindeschneideinrichtungen

For use on CNC machines and conventional thread cutting machinery

| Größe<br>Size | Baumaße Gewindebohrer / Gewindeformer<br>Dimensions of tap / cold-forming tap |                |                                                                                   |                                                                                   | Baumaße Schaftverlängerung<br>Dimensions of extension |                        |                       |                |                                   |                |             |
|---------------|-------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------|------------------------|-----------------------|----------------|-----------------------------------|----------------|-------------|
|               | ø d <sub>2</sub>                                                              | k <sub>1</sub> |  |  | l <sub>1</sub>                                        | ø d <sub>3</sub><br>h9 | k <sub>2</sub><br>h12 | l <sub>2</sub> | ø d <sub>4</sub> / d <sub>5</sub> | l <sub>3</sub> |             |
| 1             | <b>2,8</b>                                                                    | 2,1            | M 2 - M2,6                                                                        | M 4                                                                               | 21                                                    | 6                      | 4,9                   | 60             | 6,1                               | 130            | FZ111300.01 |
| 2             | <b>3,5</b>                                                                    | 2,7            | M 3                                                                               | M 4,5 - M5                                                                        | 22                                                    | 6                      | 4,9                   | 60             | 7,5                               | 130            | FZ111300.02 |
| 3             | <b>4</b>                                                                      | 3              | M 3,5                                                                             | M 5,5                                                                             | 22                                                    | 6                      | 4,9                   | 60             | 8,4                               | 130            | FZ111300.03 |
| 4             | <b>4,5</b>                                                                    | 3,4            | M 4                                                                               | M 6                                                                               | 22                                                    | 6                      | 4,9                   | 60             | 8,4                               | 130            | FZ111300.04 |
| 5             | <b>6</b>                                                                      | 4,9            | M 4,5 - M6                                                                        | M 8                                                                               | 25                                                    | 7                      | 5,5                   | 60             | 12,1                              | 130            | FZ111300.05 |
| 6             | <b>7</b>                                                                      | 5,5            | M 7                                                                               | M 9 - M10                                                                         | 25                                                    | 7                      | 5,5                   | 60             | 12,1                              | 130            | FZ111300.06 |
| 7             | <b>8</b>                                                                      | 6,2            | M 8                                                                               | M11                                                                               | 29                                                    | 8                      | 6,2                   | 60             | 13                                | 130            | FZ111300.07 |
| 8             | <b>9</b>                                                                      | 7              | M 9                                                                               | M12                                                                               | 30                                                    | 9                      | 7                     | 60             | 15                                | 130            | FZ111300.08 |
| 9             | <b>10</b>                                                                     | 8              | M10                                                                               | —                                                                                 | 32                                                    | 10                     | 8                     | 60             | 15                                | 130            | FZ111300.09 |
| 10            | <b>11</b>                                                                     | 9              | —                                                                                 | M14                                                                               | 35                                                    | 11                     | 9                     | 90             | 18                                | 180            | FZ111300.10 |
| 11            | <b>12</b>                                                                     | 9              | (M12)                                                                             | M16                                                                               | 35                                                    | 12                     | 9                     | 90             | 18                                | 180            | FZ111300.11 |
| 12            | <b>14</b>                                                                     | 11             | —                                                                                 | M18                                                                               | 39                                                    | 14                     | 11                    | 90             | 22                                | 180            | FZ111300.12 |
| 13            | <b>16</b>                                                                     | 12             | —                                                                                 | M20                                                                               | 40                                                    | 16                     | 12                    | 90             | 22                                | 180            | FZ111300.13 |
| 14            | <b>18</b>                                                                     | 14,5           | —                                                                                 | M22 - M24                                                                         | 42                                                    | 18                     | 14,5                  | 100            | 26                                | 200            | FZ111300.14 |
| 15            | <b>20</b>                                                                     | 16             | —                                                                                 | M27                                                                               | 44                                                    | 20                     | 16                    | 100            | 28                                | 200            | FZ111300.15 |
| 16            | <b>22</b>                                                                     | 18             | —                                                                                 | M30                                                                               | 46                                                    | 22                     | 18                    | 100            | 30                                | 200            | FZ111300.16 |
| 17            | <b>25</b>                                                                     | 20             | —                                                                                 | M33                                                                               | 49                                                    | 25                     | 20                    | 100            | 35                                | 200            | FZ111300.17 |



### Lange Ausführung Long design



Für den Einsatz auf CNC-Maschinen und herkömmlichen Gewindeschneideinrichtungen

For use on CNC machines and conventional thread cutting machinery

| Größe<br>Size | Baumaße Gewindebohrer / Gewindeformer<br>Dimensions of tap / cold-forming tap |                |                                                                                     |                                                                                     | Baumaße Schaftverlängerung<br>Dimensions of extension |                        |                       |                |                                   |                |             |
|---------------|-------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------|------------------------|-----------------------|----------------|-----------------------------------|----------------|-------------|
|               | ø d <sub>2</sub>                                                              | k <sub>1</sub> |  |  | l <sub>1</sub>                                        | ø d <sub>3</sub><br>h9 | k <sub>2</sub><br>h12 | l <sub>2</sub> | ø d <sub>4</sub> / d <sub>5</sub> | l <sub>3</sub> |             |
| 1             | <b>2,8</b>                                                                    | 2,1            | M 2 - M2,6                                                                          | M 4                                                                                 | 21                                                    | 6                      | 4,9                   | 65             | 6,1                               | 230            | FZ111310.01 |
| 2             | <b>3,5</b>                                                                    | 2,7            | M 3                                                                                 | M 4,5 - M5                                                                          | 22                                                    | 6                      | 4,9                   | 70             | 7,5                               | 230            | FZ111310.02 |
| 3             | <b>4</b>                                                                      | 3              | M 3,5                                                                               | M 5,5                                                                               | 22                                                    | 6                      | 4,9                   | 70             | 8,4                               | 230            | FZ111310.03 |
| 4             | <b>4,5</b>                                                                    | 3,4            | M 4                                                                                 | M 6                                                                                 | 22                                                    | 6                      | 4,9                   | 70             | 8,4                               | 230            | FZ111310.04 |
| 5             | <b>6</b>                                                                      | 4,9            | M 4,5 - M6                                                                          | M 8                                                                                 | 25                                                    | 7                      | 5,5                   | 70             | 12,1                              | 230            | FZ111310.05 |
| 6             | <b>7</b>                                                                      | 5,5            | M 7                                                                                 | M 9 - M10                                                                           | 25                                                    | 7                      | 5,5                   | 70             | 12,1                              | 230            | FZ111310.06 |
| 7             | <b>8</b>                                                                      | 6,2            | M 8                                                                                 | M11                                                                                 | 29                                                    | 8                      | 6,2                   | 80             | 13                                | 230            | FZ111310.07 |
| 8             | <b>9</b>                                                                      | 7              | M 9                                                                                 | M12                                                                                 | 30                                                    | 9                      | 7                     | 80             | 15                                | 230            | FZ111310.08 |
| 9             | <b>10</b>                                                                     | 8              | M10                                                                                 | —                                                                                   | 32                                                    | 10                     | 8                     | 80             | 15                                | 230            | FZ111310.09 |
| 10            | <b>11</b>                                                                     | 9              | —                                                                                   | M14                                                                                 | 35                                                    | 11                     | 9                     | 90             | 18                                | 330            | FZ111310.10 |
| 11            | <b>12</b>                                                                     | 9              | (M12)                                                                               | M16                                                                                 | 35                                                    | 12                     | 9                     | 90             | 18                                | 330            | FZ111310.11 |
| 12            | <b>14</b>                                                                     | 11             | —                                                                                   | M18                                                                                 | 39                                                    | 14                     | 11                    | 90             | 22                                | 330            | FZ111310.12 |
| 13            | <b>16</b>                                                                     | 12             | —                                                                                   | M20                                                                                 | 40                                                    | 16                     | 12                    | 90             | 22                                | 330            | FZ111310.13 |
| 14            | <b>18</b>                                                                     | 14,5           | —                                                                                   | M22 - M24                                                                           | 42                                                    | 18                     | 14,5                  | 100            | 26                                | 330            | FZ111310.14 |
| 15            | <b>20</b>                                                                     | 16             | —                                                                                   | M27                                                                                 | 44                                                    | 20                     | 16                    | 100            | 28                                | 330            | FZ111310.15 |
| 16            | <b>22</b>                                                                     | 18             | —                                                                                   | M30                                                                                 | 46                                                    | 22                     | 18                    | 100            | 30                                | 330            | FZ111310.16 |
| 17            | <b>25</b>                                                                     | 20             | —                                                                                   | M33                                                                                 | 49                                                    | 25                     | 20                    | 100            | 35                                | 330            | FZ111310.17 |



Weitere Ausführungen auf Anfrage  
Further designs upon request



Ersatz-Spannkappen oder Sechskant-Spannkappen auf Anfrage  
Spare clamping nuts or hexagon clamping nuts are available upon request

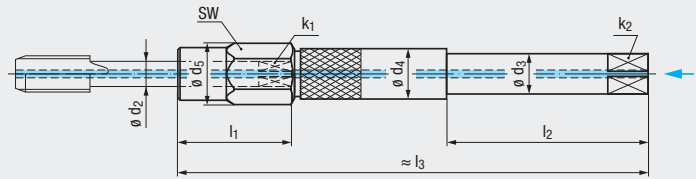
Kurze Ausführung, mit innerer Kühlschmierstoff-Zufuhr  
Short design, with internal coolant supply



$p_{max}$   
50 bar  
(700 psi)

Für den Einsatz auf CNC-  
Maschinen und herkömmlichen  
Gewindeschneideinrichtungen

For use on CNC machines  
and conventional thread  
cutting machinery



| Größe<br>Size | Baumaße Gewindebohrer / Gewindeformer<br>Dimensions of tap / cold-forming tap |                |                                                                                   |                                                                                   | Baumaße Schaftverlängerung<br>Dimensions of extension |                                    |                                   |                |                  |                  |                | Spannkappe<br>Clamping nut |                         |  |
|---------------|-------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------|------------------------------------|-----------------------------------|----------------|------------------|------------------|----------------|----------------------------|-------------------------|-------------------------------------------------------------------------------------|
|               | ø d <sub>2</sub>                                                              | k <sub>1</sub> |  |  | l <sub>1</sub>                                        | ø d <sub>3</sub><br>h <sub>9</sub> | k <sub>2</sub><br>h <sub>12</sub> | l <sub>2</sub> | ø d <sub>4</sub> | ø d <sub>5</sub> | l <sub>3</sub> | SW<br>(W/F)                | M <sub>d</sub> 1)<br>Nm |                                                                                     |
| 1             | <b>2,8</b>                                                                    | 2,1            | M 2 - M2,6                                                                        | M 4                                                                               | 21                                                    | 6                                  | 4,9                               | 60             | 6,1              | 6,5              | 130            | 6                          | 2                       | FZ112600.01                                                                         |
| 2             | <b>3,5</b>                                                                    | 2,7            | M 3                                                                               | M 4,5 - M5                                                                        | 22                                                    | 6                                  | 4,9                               | 60             | 7,5              | 9                | 130            | 8                          | 2                       | FZ112600.02                                                                         |
| 3             | <b>4</b>                                                                      | 3              | M 3,5                                                                             | M 5,5                                                                             | 22                                                    | 6                                  | 4,9                               | 60             | 8,4              | 10               | 130            | 9                          | 2,5                     | FZ112600.03                                                                         |
| 4             | <b>4,5</b>                                                                    | 3,4            | M 4                                                                               | M 6                                                                               | 22                                                    | 6                                  | 4,9                               | 60             | 8,4              | 10               | 130            | 9                          | 3                       | FZ112600.04                                                                         |
| 5             | <b>6</b>                                                                      | 4,9            | M 4,5 - M6                                                                        | M 8                                                                               | 25                                                    | 7                                  | 5,5                               | 60             | 12,1             | 13,5             | 130            | 12                         | 3,5                     | FZ112600.05                                                                         |
| 6             | <b>7</b>                                                                      | 5,5            | M 7                                                                               | M 9 - M10                                                                         | 25                                                    | 7                                  | 5,5                               | 60             | 12,1             | 13,5             | 130            | 12                         | 5                       | FZ112600.06                                                                         |
| 7             | <b>8</b>                                                                      | 6,2            | M 8                                                                               | M11                                                                               | 29                                                    | 8                                  | 6,2                               | 60             | 13               | 14,5             | 130            | 13                         | 6                       | FZ112600.07                                                                         |
| 8             | <b>9</b>                                                                      | 7              | M 9                                                                               | M12                                                                               | 30                                                    | 9                                  | 7                                 | 60             | 15               | 16,5             | 130            | 15                         | 8                       | FZ112600.08                                                                         |
| 9             | <b>10</b>                                                                     | 8              | M10                                                                               | —                                                                                 | 32                                                    | 10                                 | 8                                 | 60             | 15               | 16,5             | 130            | 15                         | 11                      | FZ112600.09                                                                         |
| 10            | <b>11</b>                                                                     | 9              | —                                                                                 | M14                                                                               | 35                                                    | 11                                 | 9                                 | 90             | 18               | 20               | 180            | 18                         | 15                      | FZ112600.10                                                                         |
| 11            | <b>12</b>                                                                     | 9              | (M12)                                                                             | M16                                                                               | 35                                                    | 12                                 | 9                                 | 90             | 18               | 20               | 180            | 18                         | 20                      | FZ112600.11                                                                         |
| 12            | <b>14</b>                                                                     | 11             | —                                                                                 | M18                                                                               | 39                                                    | 14                                 | 11                                | 90             | 22               | 25               | 180            | 22                         | 25                      | FZ112600.12                                                                         |
| 13            | <b>16</b>                                                                     | 12             | —                                                                                 | M20                                                                               | 40                                                    | 16                                 | 12                                | 90             | 22               | 25               | 180            | 22                         | 33                      | FZ112600.13                                                                         |
| 14            | <b>18</b>                                                                     | 14,5           | —                                                                                 | M22 - M24                                                                         | 42                                                    | 18                                 | 14,5                              | 100            | 26               | 29               | 200            | 26                         | 45                      | FZ112600.14                                                                         |
| 15            | <b>20</b>                                                                     | 16             | —                                                                                 | M27                                                                               | 44                                                    | 20                                 | 16                                | 100            | 28               | 32               | 200            | 28                         | 60                      | FZ112600.15                                                                         |
| 16            | <b>22</b>                                                                     | 18             | —                                                                                 | M30                                                                               | 46                                                    | 22                                 | 18                                | 100            | 30               | 34               | 200            | 30                         | 77                      | FZ112600.16                                                                         |
| 17            | <b>25</b>                                                                     | 20             | —                                                                                 | M33                                                                               | 49                                                    | 25                                 | 20                                | 100            | 35               | 41               | 200            | 36                         | 100                     | FZ112600.17                                                                         |

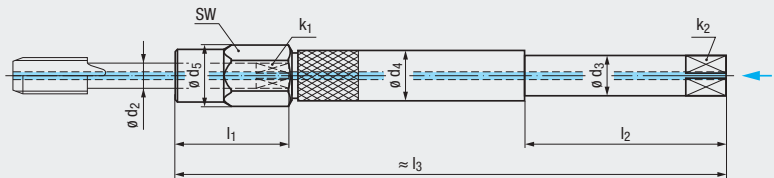
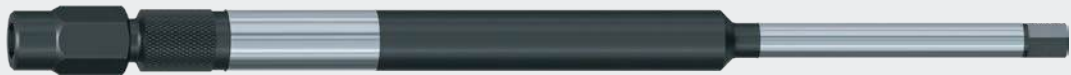
Lange Ausführung, mit innerer Kühlschmierstoff-Zufuhr  
Long design, with internal coolant supply



$p_{max}$   
50 bar  
(700 psi)

Für den Einsatz auf CNC-  
Maschinen und herkömmlichen  
Gewindeschneideinrichtungen

For use on CNC machines  
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| Größe<br>Size | Baumaße Gewindebohrer / Gewindeformer<br>Dimensions of tap / cold-forming tap |                |                                                                                     |                                                                                     | Baumaße Schaftverlängerung<br>Dimensions of extension |                                    |                                   |                |                  |                  |                | Spannkappe<br>Clamping nut |                                    |  |
|---------------|-------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------|------------------------------------|-----------------------------------|----------------|------------------|------------------|----------------|----------------------------|------------------------------------|---------------------------------------------------------------------------------------|
|               | ø d <sub>2</sub>                                                              | k <sub>1</sub> |  |  | l <sub>1</sub>                                        | ø d <sub>3</sub><br>h <sub>9</sub> | k <sub>2</sub><br>h <sub>12</sub> | l <sub>2</sub> | ø d <sub>4</sub> | ø d <sub>5</sub> | l <sub>3</sub> | SW<br>(W/F)                | M <sub>d</sub> <sup>1)</sup><br>Nm |                                                                                       |
| 1             | <b>2,8</b>                                                                    | 2,1            | M 2 - M2,6                                                                          | M 4                                                                                 | 21                                                    | 6                                  | 4,9                               | 65             | 6,1              | 6,5              | 230            | 6                          | 2                                  | FZ112610.01                                                                           |
| 2             | <b>3,5</b>                                                                    | 2,7            | M 3                                                                                 | M 4,5 - M5                                                                          | 22                                                    | 6                                  | 4,9                               | 70             | 7,5              | 9                | 230            | 8                          | 2                                  | FZ112610.02                                                                           |
| 3             | <b>4</b>                                                                      | 3              | M 3,5                                                                               | M 5,5                                                                               | 22                                                    | 6                                  | 4,9                               | 70             | 8,4              | 10               | 230            | 9                          | 2,5                                | FZ112610.03                                                                           |
| 4             | <b>4,5</b>                                                                    | 3,4            | M 4                                                                                 | M 6                                                                                 | 22                                                    | 6                                  | 4,9                               | 70             | 8,4              | 10               | 230            | 9                          | 3                                  | FZ112610.04                                                                           |
| 5             | <b>6</b>                                                                      | 4,9            | M 4,5 - M6                                                                          | M 8                                                                                 | 25                                                    | 7                                  | 5,5                               | 70             | 12,1             | 13,5             | 230            | 12                         | 3,5                                | FZ112610.05                                                                           |
| 6             | <b>7</b>                                                                      | 5,5            | M 7                                                                                 | M 9 - M10                                                                           | 25                                                    | 7                                  | 5,5                               | 70             | 12,1             | 13,5             | 230            | 12                         | 5                                  | FZ112610.06                                                                           |
| 7             | <b>8</b>                                                                      | 6,2            | M 8                                                                                 | M11                                                                                 | 29                                                    | 8                                  | 6,2                               | 80             | 13               | 14,5             | 230            | 13                         | 6                                  | FZ112610.07                                                                           |
| 8             | <b>9</b>                                                                      | 7              | M 9                                                                                 | M12                                                                                 | 30                                                    | 9                                  | 7                                 | 80             | 15               | 16,5             | 230            | 15                         | 8                                  | FZ112610.08                                                                           |
| 9             | <b>10</b>                                                                     | 8              | M10                                                                                 | —                                                                                   | 32                                                    | 10                                 | 8                                 | 80             | 15               | 16,5             | 230            | 15                         | 11                                 | FZ112610.09                                                                           |
| 10            | <b>11</b>                                                                     | 9              | —                                                                                   | M14                                                                                 | 35                                                    | 11                                 | 9                                 | 90             | 18               | 20               | 330            | 18                         | 15                                 | FZ112610.10                                                                           |
| 11            | <b>12</b>                                                                     | 9              | (M12)                                                                               | M16                                                                                 | 35                                                    | 12                                 | 9                                 | 90             | 18               | 20               | 330            | 18                         | 20                                 | FZ112610.11                                                                           |
| 12            | <b>14</b>                                                                     | 11             | —                                                                                   | M18                                                                                 | 39                                                    | 14                                 | 11                                | 90             | 22               | 25               | 330            | 22                         | 25                                 | FZ112610.12                                                                           |
| 13            | <b>16</b>                                                                     | 12             | —                                                                                   | M20                                                                                 | 40                                                    | 16                                 | 12                                | 90             | 22               | 25               | 330            | 22                         | 33                                 | FZ112610.13                                                                           |
| 14            | <b>18</b>                                                                     | 14,5           | —                                                                                   | M22 - M24                                                                           | 42                                                    | 18                                 | 14,5                              | 100            | 26               | 29               | 330            | 26                         | 45                                 | FZ112610.14                                                                           |
| 15            | <b>20</b>                                                                     | 16             | —                                                                                   | M27                                                                                 | 44                                                    | 20                                 | 16                                | 100            | 28               | 32               | 330            | 28                         | 60                                 | FZ112610.15                                                                           |
| 16            | <b>22</b>                                                                     | 18             | —                                                                                   | M30                                                                                 | 46                                                    | 22                                 | 18                                | 100            | 30               | 34               | 330            | 30                         | 77                                 | FZ112610.16                                                                           |
| 17            | <b>25</b>                                                                     | 20             | —                                                                                   | M33                                                                                 | 49                                                    | 25                                 | 20                                | 100            | 35               | 41               | 330            | 36                         | 100                                | FZ112610.17                                                                           |

1) empfohlenes Anzugsdrehmoment  
Recommend tightening torque

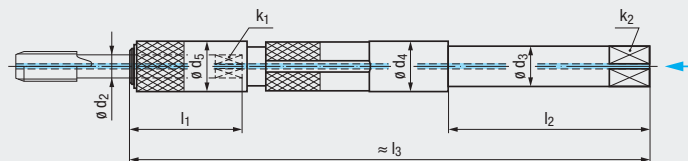
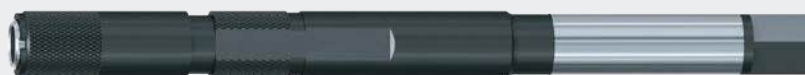


Ersatz-Sechskant-Spannkappen auf Anfrage  
Spare hexagon clamping nuts are available upon request

Kurze Ausführung E-Lock/IKZ, mit innerer Kühlschmierstoff-Zufuhr  
Short design E-Lock/IKZ, with internal coolant supply



p<sub>max</sub>  
50 bar  
(700 psi)



Für den Einsatz auf CNC-Maschinen und herkömmlichen Gewindeschneideinrichtungen

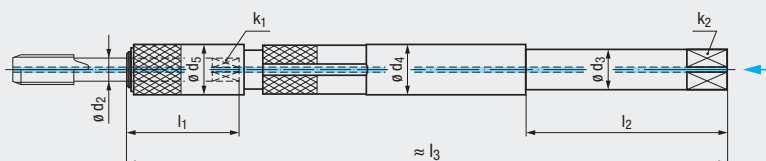
For use on CNC machines and conventional thread cutting machinery

| Größe<br>Size | Baumaße Gewindebohrer / Gewindeformer<br>Dimensions of tap / cold-forming tap |                |            |     | Baumaße Schaftverlängerung<br>Dimensions of extension |                                    |                                   |                |                                   |                | Rillenform<br>Slot shape |             |
|---------------|-------------------------------------------------------------------------------|----------------|------------|-----|-------------------------------------------------------|------------------------------------|-----------------------------------|----------------|-----------------------------------|----------------|--------------------------|-------------|
|               | ø d <sub>2</sub>                                                              | k <sub>1</sub> |            |     | l <sub>1</sub>                                        | ø d <sub>3</sub><br>h <sub>9</sub> | k <sub>2</sub><br>h <sub>12</sub> | l <sub>2</sub> | ø d <sub>4</sub> / d <sub>5</sub> | l <sub>3</sub> |                          |             |
| 4             | <b>4,5</b>                                                                    | 3,4            | M 4        | M 6 | 23                                                    | 10                                 | 8                                 | 60             | 12,1                              | 160            | A                        | FZ115490.04 |
| 5             | <b>6</b>                                                                      | 4,9            | M 4,5 - M6 | M 8 | 25                                                    | 10                                 | 8                                 | 60             | 12,1                              | 160            | A                        | FZ115490.05 |
| 7             | <b>8</b>                                                                      | 6,2            | M 8        | M11 | 29                                                    | 12                                 | 9                                 | 60             | 13                                | 160            | A                        | FZ115510.07 |
| 8             | <b>9</b>                                                                      | 7              | M 9        | M12 | 30                                                    | 12                                 | 9                                 | 60             | 15                                | 160            | A                        | FZ115510.08 |
| 9             | <b>10</b>                                                                     | 8              | M10        | —   | 32                                                    | 12                                 | 9                                 | 60             | 15                                | 160            | A                        | FZ115510.09 |
| 11            | <b>12</b>                                                                     | 9              | (M12)      | M16 | 35                                                    | 16                                 | 12                                | 60             | 18                                | 160            | B                        | FZ115530.11 |

Lange Ausführung E-Lock/IKZ, mit innerer Kühlschmierstoff-Zufuhr  
Long design E-Lock/IKZ, with internal coolant supply



p<sub>max</sub>  
50 bar  
(700 psi)



Für den Einsatz auf CNC-Maschinen und herkömmlichen Gewindeschneideinrichtungen

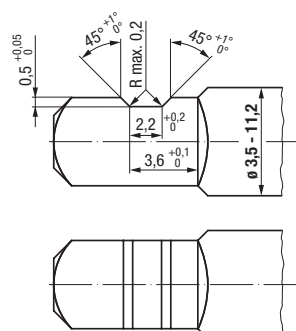
For use on CNC machines and conventional thread cutting machinery

| Größe<br>Size | Baumaße Gewindebohrer / Gewindeformer<br>Dimensions of tap / cold-forming tap |                |            |     | Baumaße Schaftverlängerung<br>Dimensions of extension |                                    |                                   |                |                                   |                | Rillenform<br>Slot shape |             |
|---------------|-------------------------------------------------------------------------------|----------------|------------|-----|-------------------------------------------------------|------------------------------------|-----------------------------------|----------------|-----------------------------------|----------------|--------------------------|-------------|
|               | ø d <sub>2</sub>                                                              | k <sub>1</sub> |            |     | l <sub>1</sub>                                        | ø d <sub>3</sub><br>h <sub>9</sub> | k <sub>2</sub><br>h <sub>12</sub> | l <sub>2</sub> | ø d <sub>4</sub> / d <sub>5</sub> | l <sub>3</sub> |                          |             |
| 4             | <b>4,5</b>                                                                    | 3,4            | M 4        | M 6 | 23                                                    | 10                                 | 8                                 | 100            | 12,1                              | 230            | A                        | FZ115480.04 |
| 5             | <b>6</b>                                                                      | 4,9            | M 4,5 - M6 | M 8 | 25                                                    | 10                                 | 8                                 | 100            | 12,1                              | 230            | A                        | FZ115480.05 |
| 7             | <b>8</b>                                                                      | 6,2            | M 8        | M11 | 29                                                    | 12                                 | 9                                 | 100            | 13                                | 230            | A                        | FZ115500.07 |
| 8             | <b>9</b>                                                                      | 7              | M 9        | M12 | 30                                                    | 12                                 | 9                                 | 100            | 15                                | 230            | A                        | FZ115500.08 |
| 9             | <b>10</b>                                                                     | 8              | M10        | —   | 32                                                    | 12                                 | 9                                 | 100            | 15                                | 230            | A                        | FZ115500.09 |
| 11            | <b>12</b>                                                                     | 9              | (M12)      | M16 | 35                                                    | 16                                 | 12                                | 100            | 18                                | 230            | B                        | FZ115520.11 |

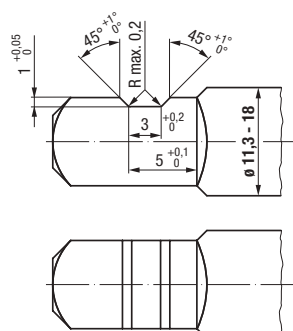
### Bearbeitungsmaße für Rillenform am Gewindebohrer- / Gewindeformer-Vierkant

Machining specifications for the slot shape on the driving square of taps / cold-forming taps

#### Form A



#### Form B



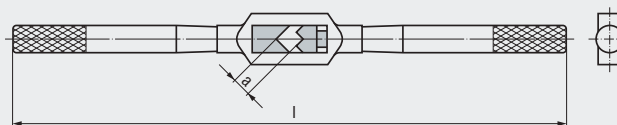
Lehren für E-Lock-Rillenform siehe Seite 725  
Gauges for E-Lock slots, see page 725



Für normale Beanspruchung  
For normal use



≈ DIN  
1814



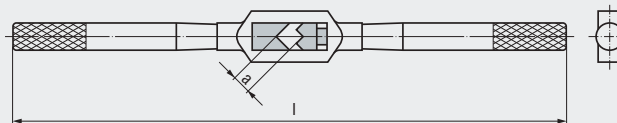
| Größe<br>Size | Baumaße<br>Dimensions         |  |     | QR Code                                                                             |
|---------------|-------------------------------|--|-----|-------------------------------------------------------------------------------------|
|               | $a_{\min.} - a_{\max.}$<br>mm |  | $l$ |                                                                                     |
| 0             | 2 - 5                         |  | 125 |  |
| 1             | 2 - 6                         |  | 180 |                                                                                     |
| 1 1/2         | 2,5 - 8                       |  | 200 |                                                                                     |
| 2             | 4 - 9                         |  | 280 |                                                                                     |
| 3             | 4,9 - 12                      |  | 375 |                                                                                     |
| 4             | 5,5 - 16                      |  | 500 |                                                                                     |
| 5             | 7 - 20                        |  | 750 | FZ111010.05                                                                         |

Für starke Beanspruchung  
For heavy use



Aus gehärtetem Stahl (Gehäuse: Temperguss oder Stahl geschmiedet)  
Made of hardened steel (casing: malleable iron or forged steel)

≈ DIN  
1814



| Größe<br>Size | Baumaße<br>Dimensions         |  |      | QR Code                                                                               |
|---------------|-------------------------------|--|------|---------------------------------------------------------------------------------------|
|               | $a_{\min.} - a_{\max.}$<br>mm |  | $l$  |                                                                                       |
| 0             | 2 - 5                         |  | 125  |  |
| 1             | 2 - 6                         |  | 180  |                                                                                       |
| 1 1/2         | 2,5 - 8                       |  | 200  |                                                                                       |
| 2             | 4 - 9                         |  | 280  |                                                                                       |
| 3             | 4,9 - 12                      |  | 375  |                                                                                       |
| 4             | 5,5 - 16                      |  | 500  |                                                                                       |
| 5             | 7 - 20                        |  | 750  | FZ111000.05                                                                           |
| 6             | 9 - 25                        |  | 1000 | FZ111000.06                                                                           |
| 7             | 16 - 32                       |  | 1250 | FZ111000.07                                                                           |

Product  
FinderV<sub>c</sub>

M

MF

UNC  
UN-8UNF  
UNEFG, Rp  
NPSM, NPSFNPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

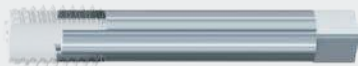
EG (STI)

SELF-LOCK

Tr, Tr-F  
RdZubehör  
Accessories

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC<br>UN-8            |
| UNF<br>UNEF            |
| G, Rp<br>NPSM, NPSF    |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr, Tr-F<br>Rd         |
| Zubehör<br>Accessories |

### Für Gewindebohrer mit 3 geraden Nuten For taps with 3 straight flutes



für Gewinde  
for thread size



|     |               |
|-----|---------------|
| M 3 | FZ111100.03/3 |
| M 4 | FZ111100.04/3 |
| M 5 | FZ111100.05/3 |
| M 6 | FZ111100.06/3 |
| M 8 | FZ111100.08/3 |
| M10 | FZ111100.10/3 |
| M12 | FZ111100.12/3 |
| M14 | FZ111100.14/3 |
| M16 | FZ111100.16/3 |
| M20 | FZ111100.20/3 |

Weitere Ausführungen auf Anfrage  
Further designs upon request

### Für Gewindebohrer mit 4 geraden Nuten For taps with 4 straight flutes



für Gewinde  
for thread size



|     |               |
|-----|---------------|
| M 8 | FZ111100.08/4 |
| M10 | FZ111100.10/4 |
| M12 | FZ111100.12/4 |
| M16 | FZ111100.16/4 |
| M20 | FZ111100.20/4 |





## Gewindeformer Cold-Forming Taps

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| Übersichten                | Contents                        | 308 - 311 |
| Wegweiser und Schnittwerte | Product finder and cutting data | 312 - 317 |
| Produktseiten              | Product pages                   | 318 - 350 |

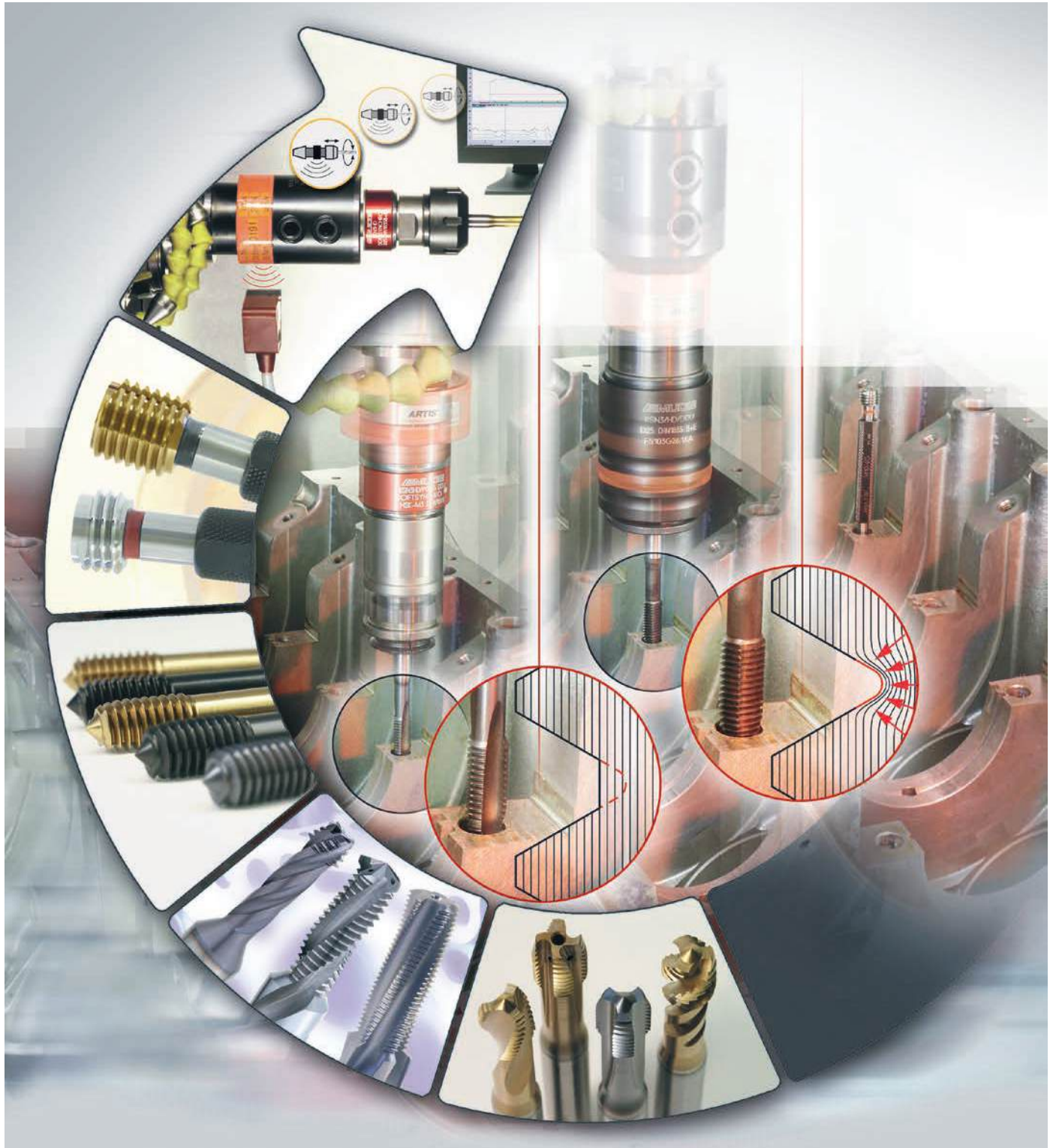


### Cut&Form – Innengewindefertigung durch Kombination von Spanen und Umformen

Das Innengewinde-Fertigungssystem Cut&Form ist eine Kombination aus spanenden und umformenden Verfahren, welche jeweils einen bestimmten Teil des Gewindeprofils erzeugen.

### Cut&Form – Production of internal threads by a combination of machining and cold forming

The internal thread production system Cut&Form is a combination of machining and cold-forming processes which each produce a specific part of the thread profile.



#### Vorteile

- Verfestigung des Gewindes und Erhöhung der Dauerfestigkeit
- Gewindeformen von großen Gewindesteigungen
- Gewindeformen von schlecht fließenden Werkstoffen
- Erzeugung eines eng tolerierten Innengewindekerndurchmessers ohne „Kralle“
- Glättung der Gewindeoberfläche

#### Advantages

- Strengthened threads and increased long-term resistance
- Cold forming of large threads with coarse pitch
- Cold forming of threads in difficult materials
- Production of a narrow-tolerance minor diameter without space pocket
- Extra smooth thread surfaces



Gewindeformer  
mit verstärktem Schaft  
Cold-forming taps  
with reinforced shank



**Drück 1**  
**InnoForm 1**

Gewindeformer  
mit durchfallendem Schaft  
Cold-forming taps  
with reduced shank



**Drück 2**  
**InnoForm 2**

Gewindeformer  
mit extra-langem Schaft  
Cold-forming taps  
with extra long shank



**InnoForm 1-LS**  
**InnoForm 2-LS**

Gewindeformer mit langen  
Nuten und langem Schaft  
Cold-forming taps with  
long flutes and long shank



**InnoForm 2-LF3**  
**InnoForm 2-LF4**

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| 344 - 345 | 346 - 347 |          |           | <b>UNF</b>     |
|           | 348 - 349 |          |           | <b>G (BSP)</b> |
| 350       |           |          |           | <b>LK-M</b>    |

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|  <p>Spezial-Schaftverlängerungen<br/>Special shank extensions</p> | 302 - 304 |



| Product Finder |
|----------------|
| V <sub>c</sub> |
| M              |
| MF             |
| UNC            |
| UNF            |
| G              |
| SELF-LOCK      |

|                                                                                   |                                                                                  |                                                                                    |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|   |  |  |
| Drück<br>STEEL<br>TIN                                                             | Drück<br>STEEL-SN<br>TIN                                                         | InnoForm<br>Z-SN<br>PM-TIN-80                                                      |
|  |                                                                                  |                                                                                    |

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|---|-----|-----|-----|-----|





IKZ

Product  
FinderV<sub>c</sub>

M

MF

UNC

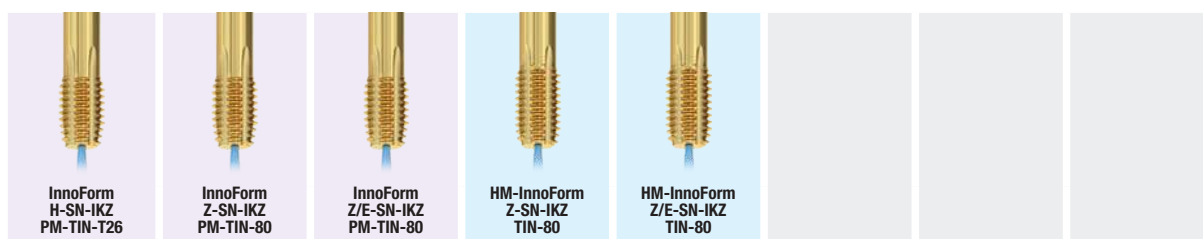
UNF

G

SELF-LOCK

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| 319 | 319, 327 | 319, 328 | 320 | 321 | 321 | 321 | 322 | M       |
|     | 336      | 337      |     |     |     |     |     | MF      |
|     |          |          |     |     |     |     |     | UNC     |
|     |          |          |     |     |     |     |     | UNF     |
|     |          |          |     |     |     |     |     | G (BSP) |

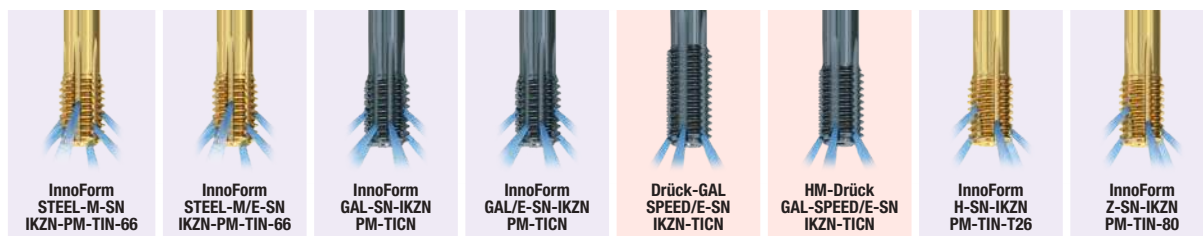


IKZ



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| 338                   | 335, 339              |          |     |     |  |  | MF      |
|                       | 341, 343              |          |     |     |  |  | UNC     |
|                       | 345, 347              |          |     |     |  |  | UNF     |
|                       | 349                   |          |     |     |  |  | G (BSP) |



IKZN



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| 334, 337 | 335, 337 |     |     | 335, 337 | 335, 337 |          |          | MF      |
|          |          |     |     |          |          |          |          | UNC     |
|          |          |     |     |          |          |          |          | UNF     |
|          |          |     |     |          |          |          |          | G (BSP) |

# Einsatzempfehlungen und Schnittwerte

## Bitte beachten:

Die in den jeweiligen Spalten angegebenen Umfangsgeschwindigkeiten (V<sub>c</sub> in m/min) sind Richtwerte, welche je nach Einsatzbedingungen (Material, Schmierung, Maschine, usw.) angepasst werden müssen.

Die empfohlenen Umfangsgeschwindigkeiten sind bezogen auf einen Gewinde- Nenndurchmesser von 10 mm.

 = DIN-Form / Gänge (Anformkegellänge)

# Application recommendation and cutting data

## Please note:

The circumferential speeds (V<sub>c</sub> in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.).

The recommended circumferential speeds are related to a nominal thread diameter of 10 mm.

 = DIN form / threads (lead taper length)

Internationaler Werkstoffvergleich siehe Seite 764 - 785

International comparison of materials, see page 764 - 785

| Einsatzgebiete – Material<br>Applications – material |                                                                     |                                                                       | Material-Beispiele<br>Material examples | Material-Nummern<br>Material numbers                              |
|------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------------|
| P                                                    | <b>Stahlwerkstoffe</b>                                              | <b>Steel materials</b>                                                |                                         |                                                                   |
|                                                      | 1.1 Kaltfließpresstähle, Baustähle, Automatenstähle, u.a.           | Cold-extrusion steels, Construction steels, Free-cutting steels, etc. | ≤ 600 N/mm <sup>2</sup>                 | Cq15 1.1132<br>S235JR (St37-2) 1.0037<br>10SPb20 1.0722           |
|                                                      | 2.1 Baustähle, Einsatzstähle, Stahlguss, u.a.                       | Construction steels, Cementation steels, Steel castings, etc.         | ≤ 800 N/mm <sup>2</sup>                 | E360 (St70-2) 1.0070<br>16MnCr5 1.7131<br>GS-25CrMo4 1.7218       |
|                                                      | 3.1 Einsatzstähle, Vergütungsstähle, Kaltarbeitsstähle, u.a.        | Cementation steels, Heat-treatable steels, Cold work steels, etc.     | ≤ 1000 N/mm <sup>2</sup>                | 20MoCr3 1.7320<br>42CrMo4 1.7225<br>102Cr6 1.2067                 |
|                                                      | 4.1 Vergütungsstähle, Kaltarbeitsstähle, Nitrierstähle, u.a.        | Heat-treatable steels, Cold work steels, Nitriding steels, etc.       | ≤ 1200 N/mm <sup>2</sup>                | 50CrMo4 1.7228<br>X45NiCrMo4 1.2767<br>31CrMo12 1.8515            |
| M                                                    | 5.1 Hochlegierte Stähle, Kaltarbeitsstähle, Warmarbeitsstähle, u.a. | High-alloyed steels, Cold work steels, Hot work steels, etc.          | ≤ 1400 N/mm <sup>2</sup>                | X38CrMoV5-3 1.2367<br>X100CrMoV8-1-1 1.2990<br>X40CrMoV5-1 1.2344 |
|                                                      | <b>Nichtrostende Stahlwerkstoffe</b>                                | <b>Stainless steel materials</b>                                      |                                         |                                                                   |
|                                                      | 1.1 Ferritisch, martensitisch                                       | Ferritic, martensitic                                                 | ≤ 950 N/mm <sup>2</sup>                 | X2CrTi12 1.4512                                                   |
|                                                      | 2.1 Austenitisch                                                    | Austenitic                                                            | ≤ 950 N/mm <sup>2</sup>                 | X6CrNiMoTi17-12-2 1.4571                                          |
|                                                      | 3.1 Austenitisch-ferritisch (Duplex)                                | Austenitic-ferritic (Duplex)                                          | ≤ 1100 N/mm <sup>2</sup>                | X2CrNiMoN22-5-3 1.4462                                            |
| K                                                    | 4.1 Austenitisch-ferritisch hitzebeständig (Super Duplex)           | Austenitic-ferritic heat-resistant (Super Duplex)                     | ≤ 1250 N/mm <sup>2</sup>                | X2CrNiMoN25-7-4 1.4410                                            |
|                                                      | <b>Gusswerkstoffe</b>                                               | <b>Cast materials</b>                                                 |                                         |                                                                   |
|                                                      | 1.1 Gusseisen mit Lamellengrafit (GJL)                              | Cast iron with lamellar graphite (GJL)                                | 100-250 N/mm <sup>2</sup>               | EN-GJL-200 (GG20) EN-JL-1030                                      |
|                                                      | 1.2 Gusseisen mit Kugelgrafit (GJS)                                 | Cast iron with nodular graphite (GJS)                                 | 250-450 N/mm <sup>2</sup>               | EN-GJL-300 (GG30) EN-JL-1050                                      |
|                                                      | 2.1 Gusseisen mit Kugelgrafit (GJS)                                 | Cast iron with nodular graphite (GJS)                                 | 350-500 N/mm <sup>2</sup>               | EN-GJS-400-15 (GGG40) EN-JS-1030                                  |
| N                                                    | 2.2 Gusseisen mit Vermiculargrafit (GJV)                            | Cast iron with vermicular graphite (GJV)                              | 500-900 N/mm <sup>2</sup>               | EN-GJS-700-2 (GGG70) EN-JS-1070                                   |
|                                                      | 3.1 Gusseisen mit Vermiculargrafit (GJV)                            | Cast iron with vermicular graphite (GJV)                              | 300-400 N/mm <sup>2</sup>               | GJV 300                                                           |
|                                                      | 3.2 Gusseisen mit Vermiculargrafit (GJV)                            | Cast iron with vermicular graphite (GJV)                              | 400-500 N/mm <sup>2</sup>               | GJV 450                                                           |
|                                                      | 4.1 Temperguss (GTMW, GTMB)                                         | Malleable cast iron (GTMW, GTMB)                                      | 250-500 N/mm <sup>2</sup>               | EN-GJMW-350-4 (GTW-35) EN-JM-1010                                 |
|                                                      | 4.2 Temperguss (GTMW, GTMB)                                         | Malleable cast iron (GTMW, GTMB)                                      | 500-800 N/mm <sup>2</sup>               | EN-GJMB-450-6 (GTS-45) EN-JM-1140                                 |
| S                                                    | <b>Nichteisenwerkstoffe</b>                                         | <b>Non ferrous materials</b>                                          |                                         |                                                                   |
|                                                      | <b>Aluminium-Legierungen</b>                                        | <b>Aluminium alloys</b>                                               |                                         |                                                                   |
|                                                      | 1.1 Aluminium-Knetlegierungen                                       | Aluminium wrought alloys                                              | ≤ 200 N/mm <sup>2</sup>                 | EN AW-AlMn1 EN AW-3103                                            |
|                                                      | 1.2 Aluminium-Knetlegierungen                                       | Aluminium wrought alloys                                              | ≤ 350 N/mm <sup>2</sup>                 | EN AW-AlMgSi EN AW-6060                                           |
|                                                      | 1.3 Aluminium-Knetlegierungen                                       | Aluminium wrought alloys                                              | ≤ 550 N/mm <sup>2</sup>                 | EN AW-AlZn5Mg3Cu EN AW-7022                                       |
| H                                                    | 1.4 Aluminium-Gusslegierungen                                       | Aluminium cast alloys                                                 | Si ≤ 7%                                 | EN AC-AlMg5 EN AC-307 G                                           |
|                                                      | 1.5 Aluminium-Gusslegierungen                                       | Aluminium cast alloys                                                 | 7% < Si ≤ 12%                           | EN AC-AISi9Cu3 EN AC-46500                                        |
|                                                      | 1.6 Aluminium-Gusslegierungen                                       | Aluminium cast alloys                                                 | 12% < Si ≤ 17%                          | GD-AISI17Cu4FeMg                                                  |
|                                                      | <b>Kupfer-Legierungen</b>                                           | <b>Copper alloys</b>                                                  |                                         |                                                                   |
|                                                      | 2.1 Reinkupfer, niedriglegiertes Kupfer                             | Pure copper, low-alloyed copper                                       | ≤ 400 N/mm <sup>2</sup>                 | E-Cu 57 EN CW 004 A                                               |
| S                                                    | 2.2 Kupfer-Zink-Legierungen (Messing, langspanend)                  | Copper-zinc alloys (brass, long-chipping)                             | ≤ 550 N/mm <sup>2</sup>                 | CuZn37 (Ms63) EN CW 508 L                                         |
|                                                      | 2.3 Kupfer-Zink-Legierungen (Messing, kurzspanend)                  | Copper-zinc alloys (brass, short-chipping)                            | ≤ 550 N/mm <sup>2</sup>                 | CuZn36Pb3 (Ms58) EN CW 603 N                                      |
|                                                      | 2.4 Kupfer-Aluminium-Legierungen (Alubronze, langspanend)           | Copper-aluminium alloys (alu bronze, long-chipping)                   | ≤ 800 N/mm <sup>2</sup>                 | CuAl10Ni5Fe4 EN CW 307 G                                          |
|                                                      | 2.5 Kupfer-Zinn-Legierungen (Zinnbronze, langspanend)               | Copper-tin alloys (tin bronze, long-chipping)                         | ≤ 700 N/mm <sup>2</sup>                 | CuSn8P EN CW 459 K                                                |
|                                                      | 2.6 Kupfer-Zinn-Legierungen (Zinnbronze, kurzspanend)               | Copper-tin alloys (tin bronze, short-chipping)                        | ≤ 400 N/mm <sup>2</sup>                 | CuSn7 ZnPb (Rg7) 2.1090                                           |
| H                                                    | 2.7 Kupfer-Sonderlegierungen                                        | Special copper alloys                                                 | ≤ 600 N/mm <sup>2</sup>                 | (AMPCO® 8)                                                        |
|                                                      | 2.8 Kupfer-Sonderlegierungen                                        | Special copper alloys                                                 | ≤ 1400 N/mm <sup>2</sup>                | (AMPCO® 45)                                                       |
|                                                      | <b>Magnesium-Legierungen</b>                                        | <b>Magnesium alloys</b>                                               |                                         |                                                                   |
|                                                      | 3.1 Magnesium-Knetlegierungen                                       | Magnesium wrought alloys                                              | ≤ 500 N/mm <sup>2</sup>                 | MgAl6Zn 3.5612                                                    |
|                                                      | 3.2 Magnesium-Gusslegierungen                                       | Magnesium cast alloys                                                 | ≤ 500 N/mm <sup>2</sup>                 | EN-MCMgAl9Zn1 EN-MC21120                                          |
| S                                                    | <b>Kunststoffe</b>                                                  | <b>Synthetics</b>                                                     |                                         |                                                                   |
|                                                      | 4.1 Duroplaste (kurzspanend)                                        | Duroplastics (short-chipping)                                         |                                         | Bakelit, Pertinax                                                 |
|                                                      | 4.2 Thermoplaste (langspanend)                                      | Thermoplastics (long-chipping)                                        |                                         | PMMA, POM, PVC                                                    |
|                                                      | 4.3 Faserverstärkte Kunststoffe (Faseranteil ≤ 30%)                 | Fibre-reinforced synthetics (fibre content ≤ 30%)                     |                                         | GFK, CFK, AFK                                                     |
|                                                      | 4.4 Faserverstärkte Kunststoffe (Faseranteil > 30%)                 | Fibre-reinforced synthetics (fibre content > 30%)                     |                                         | GFK, CFK, AFK                                                     |
| S                                                    | <b>Besondere Werkstoffe</b>                                         | <b>Special materials</b>                                              |                                         |                                                                   |
|                                                      | 5.1 Grafit                                                          | Graphite                                                              |                                         | C 8000                                                            |
|                                                      | 5.2 Wolfram-Kupfer-Legierungen                                      | Tungsten-copper alloys                                                |                                         | W-Cu 80/20                                                        |
|                                                      | 5.3 Verbundwerkstoffe                                               | Composite materials                                                   |                                         | Hyllite, Alucobond                                                |
|                                                      | <b>Spezialwerkstoffe</b>                                            | <b>Special materials</b>                                              |                                         |                                                                   |
| S                                                    | <b>Titan-Legierungen</b>                                            | <b>Titanium alloys</b>                                                |                                         |                                                                   |
|                                                      | 1.1 Reintitan                                                       | Pure titanium                                                         | ≤ 450 N/mm <sup>2</sup>                 | Ti1 3.7025                                                        |
|                                                      | 1.2 Titan-Legierungen                                               | Titanium alloys                                                       | ≤ 900 N/mm <sup>2</sup>                 | TiAl6V4 3.7165                                                    |
|                                                      | 1.3 Titan-Legierungen                                               | Titanium alloys                                                       | ≤ 1250 N/mm <sup>2</sup>                | TiAl4Mo4Sn2 3.7185                                                |
|                                                      | <b>Nickel-, Kobalt- und Eisen-Legierungen</b>                       | <b>Nickel alloys, cobalt alloys and iron alloys</b>                   |                                         |                                                                   |
| S                                                    | 2.1 Reinnickel                                                      | Pure nickel                                                           | ≤ 600 N/mm <sup>2</sup>                 | Ni 99.6 2.4060                                                    |
|                                                      | 2.2 Nickel-Basis-Legierungen                                        | Nickel-base alloys                                                    | ≤ 1000 N/mm <sup>2</sup>                | Monel 400 2.4360                                                  |
|                                                      | 2.3 Nickel-Basis-Legierungen                                        | Nickel-base alloys                                                    | ≤ 1600 N/mm <sup>2</sup>                | Inconel 718 2.4668                                                |
|                                                      | 2.4 Kobalt-Basis-Legierungen                                        | Cobalt-base alloys                                                    | ≤ 1000 N/mm <sup>2</sup>                | Udimet 605                                                        |
|                                                      | 2.5 Kobalt-Basis-Legierungen                                        | Cobalt-base alloys                                                    | ≤ 1600 N/mm <sup>2</sup>                | Haynes 25 2.4964                                                  |
| H                                                    | 2.6 Eisen-Basis-Legierungen                                         | Iron-base alloys                                                      | ≤ 1500 N/mm <sup>2</sup>                | Incoloy 800 1.4958                                                |
|                                                      | <b>Harte Werkstoffe</b>                                             | <b>Hard materials</b>                                                 |                                         |                                                                   |
|                                                      | 1.1 Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 44 - 50 HRC                             | Weldox 1100                                                       |
|                                                      | 1.2 Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 50 - 55 HRC                             | Hardox 550                                                        |
|                                                      | 1.3 Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 55 - 60 HRC                             | Armox 600T                                                        |
|                                                      | 1.4 Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 60 - 63 HRC                             | Ferro-Titanit                                                     |
|                                                      | 1.5 Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 63 - 66 HRC                             | HSSE                                                              |

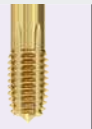
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                | Product Finder                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------|-----------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                | V <sub>C</sub>                                                                                                                                            |
| Drück<br>STEEL<br>NT                                                                                         | Drück<br>STEEL<br>TIN                        | Drück<br>STEEL-SN<br>NT | Drück<br>STEEL-SN<br>TIN                | HM-Drück<br>STEEL-SN-IKZ                                                                                     | InnoForm<br>STEEL-BL/D<br>PM-TIN                                                                             | InnoForm<br>STEEL-M-SN<br>PM-TIN-66                                                                          | InnoForm<br>STEEL-M-SN<br>IKZ-PM-TIN-66                                                                        | InnoForm<br>STEEL-M-SN<br>IKZN-PM-TIN-66                                                                       | InnoForm<br>STEEL-M/E-SN<br>IKZ-PM-TIN-66                                                                      | M                                                                                                                                                         |
| C / 2-3                                                                                                      | C / 2-3                                      | C / 2-3                 | C / 2-3                                 | C / 2-3                                                                                                      | D / 4-5                                                                                                      | C / 2-3                                                                                                      | C / 2-3                                                                                                        | C / 2-3                                                                                                        | E / 1,5-2                                                                                                      | MF                                                                                                                                                        |
| max. 3 x d <sub>1</sub><br> |                                              |                         |                                         | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | Gewindetiefe<br>und Lochform<br>Thread depth<br>and hole type                                                                                             |
| 318                                                                                                          | 318, 327<br>334, 336<br>340, 342<br>344, 346 | 318, 327                | 318<br>334, 336<br>340, 342<br>344, 346 | 319 <sup>1)</sup>                                                                                            | 319                                                                                                          | 319, 327<br>334, 336                                                                                         | 319, 327<br>336                                                                                                | 319, 328<br>334, 337                                                                                           | 319, 328<br>337                                                                                                | M<br>MF<br>UNC<br>UNF<br>UNE, UN-8<br>G, Rp<br>NPSM, NPSF<br>NPT, NPTF, Rc<br>W<br>BSW, BSF<br>Pg<br>MJ<br>UNJC, UNJF<br>EG (STI)<br>LK-M<br>Tr, Tr-F, Rd |
| min. empf. max.                                                                                              | min. empf. max.                              | min. empf. max.         | min. empf. max.                         | min. empf. max.                                                                                              | min. empf. max.                                                                                              | min. empf. max.                                                                                              | min. empf. max.                                                                                                | min. empf. max.                                                                                                | min. empf. max.                                                                                                | vc [m/min]                                                                                                                                                |
|                                                                                                              | 15 <b>30</b> 45                              |                         | 15 <b>30</b> 45                         |                                                                                                              | 15 <b>30</b> 45                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                | <b>P</b>                                                                                                                                                  |
| 5 <b>8</b> 12                                                                                                | 10 <b>20</b> 40                              | 5 <b>8</b> 12           | 10 <b>20</b> 40                         |                                                                                                              | 10 <b>20</b> 40                                                                                              | 10 <b>20</b> 40                                                                                              | 10 <b>20</b> 40                                                                                                | 10 <b>20</b> 40                                                                                                | 10 <b>20</b> 40                                                                                                |                                                                                                                                                           |
|                                                                                                              | 10 <b>15</b> 25                              |                         | 10 <b>15</b> 25                         |                                                                                                              | 10 <b>15</b> 25                                                                                              | 10 <b>15</b> 25                                                                                              | 10 <b>15</b> 25                                                                                                | 10 <b>15</b> 25                                                                                                | 10 <b>15</b> 25                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              | 5 <b>10</b> 20                                                                                               | 5 <b>10</b> 20                                                                                               | 5 <b>10</b> 20                                                                                                 | 5 <b>10</b> 20                                                                                                 | 5 <b>10</b> 20                                                                                                 |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              | 5 <b>10</b> 15                                                                                               | 5 <b>10</b> 15                                                                                                 | 5 <b>10</b> 15 <sup>3)</sup>                                                                                   | 5 <b>10</b> 15                                                                                                 |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                | <b>M</b>                                                                                                                                                  |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                | <b>K</b>                                                                                                                                                  |
| 10 <b>15</b> 20                                                                                              |                                              | 10 <b>15</b> 20         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                | <b>N</b>                                                                                                                                                  |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
| 10 <b>20</b> 30                                                                                              | 20 <b>40</b> 60<br>20 <b>40</b> 60           | 10 <b>20</b> 30         | 20 <b>40</b> 60<br>20 <b>40</b> 60      | 40 <b>80</b> 160<br>40 <b>60</b> 80                                                                          |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              | 10 <b>20</b> 40                              |                         | 10 <b>20</b> 40                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                | <b>S</b>                                                                                                                                                  |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
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|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                | <b>H</b>                                                                                                                                                  |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |
|                                                                                                              |                                              |                         |                                         |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                                                           |

<sup>1)</sup> Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication

<sup>3)</sup> InnoForm 1 mit IKZN nur geeignet für Materialgruppen  
InnoForm 1 with IKZN only suitable for material groups

| Product Finder         |                                                                                   | EMUGE<br>-STEEL-                                                                                             |                                                                                                              |                                                                                                              | EMUGE<br>-VA-                                                                                                |                                                                                                              |                                                                                                              | EMUGE<br>-AL-                                                                                                  |                                                                                                                |                                                                                                                |                                                                                                                | EMUGE<br>-GAL- |  |  |
|------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------|--|--|
| V <sub>c</sub>         |                                                                                   |                              |                              |                              |                              |                              |                              |                              |                              |                              |                              |                |  |  |
| M                      |                                                                                   | InnoForm STEEL-M/E-SN IKZN-PM-TiN-66                                                                         | InnoForm VA/E-SN PM-TiN-T26                                                                                  | InnoForm VA/E-SN-IKZ PM-TiN-T26                                                                              | InnoForm AL-SN PM-GLT-104                                                                                    | InnoForm AL-SN-IKZ PM-GLT-104                                                                                | InnoForm AL/E-SN PM-GLT-104                                                                                  | InnoForm AL/E-SN-IKZ PM-GLT-104                                                                                | InnoForm GAL-SN PM-TiCN                                                                                        | InnoForm GAL-SN-IKZ PM-TiCN                                                                                    | InnoForm GAL-SN-IKZN PM-TiCN                                                                                   |                |  |  |
| MF                     |  | E / 1,5-2                                                                                                    | E / 1,5-2                                                                                                    | E / 1,5-2                                                                                                    | C / 2-3                                                                                                      | C / 2-3                                                                                                      | E / 1,5-2                                                                                                    | E / 1,5-2                                                                                                      | C / 2-3                                                                                                        | C / 2-3                                                                                                        | C / 2-3                                                                                                        |                |  |  |
| UNC                    | Gewindtiefe und Lochform<br>Thread depth and hole type                            | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> |                |  |  |
| UNF                    | M                                                                                 | 320, 328                                                                                                     | 320                                                                                                          | 320                                                                                                          | 321                                                                                                          | 321                                                                                                          | 321                                                                                                          | 321                                                                                                            | 321                                                                                                            | 321                                                                                                            | 321                                                                                                            |                |  |  |
|                        | MF                                                                                | 335, 337                                                                                                     |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| G                      | UNC                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| SELF-LOCK              | UNF                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | UNEf, UN-8                                                                        |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | G, Rp                                                                             |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | NPSM, NPSF                                                                        |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | NPT, NPTF, Rc                                                                     |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| W                      |                                                                                   |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| BSW, BSF               |                                                                                   |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| Pg                     |                                                                                   |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| MJ                     |                                                                                   |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| UNJC, UNJF             |                                                                                   |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| EG (STI)               |                                                                                   |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| LK-M                   |                                                                                   |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| Tr, Tr-F, Rd           |                                                                                   |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| v <sub>c</sub> [m/min] |                                                                                   | min. empf. max.<br>rec.                                                                                      | min. empf. max.<br>rec.                                                                                      | min. empf. max.<br>rec.                                                                                      | min. empf. max.<br>rec.                                                                                      | min. empf. max.<br>rec.                                                                                      | min. empf. max.<br>rec.                                                                                      | min. empf. max.<br>rec.                                                                                        | min. empf. max.<br>rec.                                                                                        | min. empf. max.<br>rec.                                                                                        | min. empf. max.<br>rec.                                                                                        |                |  |  |
| P                      | 1.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.1                                                                               | 10 20 40                                                                                                     |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 3.1                                                                               | 10 15 25                                                                                                     |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 4.1                                                                               | 5 10 20                                                                                                      |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 5.1                                                                               | 5 10 15 3)                                                                                                   |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| M                      | 1.1                                                                               |                                                                                                              | 5 8 12                                                                                                       | 5 8 12                                                                                                       |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.1                                                                               |                                                                                                              | 2 5 8                                                                                                        | 2 5 8                                                                                                        |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 3.1                                                                               |                                                                                                              | 2 5 8                                                                                                        | 2 5 8                                                                                                        |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 4.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| K                      | 1.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 1.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 3.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 3.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 4.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 4.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| N                      | 1.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              | 20 40 60                                                                                                     | 20 40 60                                                                                                     | 20 40 60                                                                                                     | 20 40 60                                                                                                       |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 1.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              | 20 40 60                                                                                                     | 20 40 60                                                                                                     | 20 40 60                                                                                                     | 20 40 60                                                                                                       |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 1.3                                                                               |                                                                                                              |                                                                                                              |                                                                                                              | 20 40 60                                                                                                     | 20 40 60                                                                                                     | 20 40 60                                                                                                     | 20 40 60                                                                                                       |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 1.4                                                                               |                                                                                                              |                                                                                                              |                                                                                                              | 20 40 60                                                                                                     | 20 40 60                                                                                                     | 20 40 60                                                                                                     | 20 40 60                                                                                                       |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 1.5                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                | 20 40 60                                                                                                       | 20 40 60                                                                                                       | 20 40 60                                                                                                       |                |  |  |
|                        | 1.6                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                | 20 30 40                                                                                                       | 20 30 40                                                                                                       | 20 30 40                                                                                                       |                |  |  |
|                        | 2.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              | 5 15 30                                                                                                      | 5 15 30                                                                                                      | 5 15 30                                                                                                      | 5 15 30                                                                                                        |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              | 10 20 40                                                                                                     | 10 20 40                                                                                                     | 10 20 40                                                                                                     | 10 20 40                                                                                                       |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.3                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.4                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.5                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.6                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.7                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.8                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 3.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 3.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 4.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 4.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 4.3                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 4.4                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| S                      | 5.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 5.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 5.3                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 1.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 1.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 1.3                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
| H                      | 2.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.3                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.4                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.5                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 2.6                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 1.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 1.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 1.3                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 1.4                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |
|                        | 1.5                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                |                                                                                                                |                                                                                                                |                |  |  |

|                |                      |
|----------------|----------------------|
| Product Finder | <b>v<sub>c</sub></b> |
|                | M                    |
|                | MF                   |
|                | UNC                  |
|                | UNF                  |
|                | G                    |
| SELF-LOCK      |                      |

| Product Finder         |                                                                                   | EMUGE<br>H                                                                                                   |                                                                                                              |                                                                                                              | EMUGE<br>Z                                                                                                   |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| V <sub>c</sub>         |                                                                                   |                              |                              |                              |                              |                              |                               |  |  |                              |  |
| M                      |                                                                                   | InnoForm H-SN-IKZN-LF3 PM-TIN-T26                                                                            | InnoForm H-SN-IKZ-LF4 PM-TIN-T26                                                                             | InnoForm H-SN-IKZN-LF4 PM-TIN-T26                                                                            | InnoForm Z-SN PM-TIN-80                                                                                      | InnoForm Z-SN-IKZ PM-TIN-80                                                                                  | InnoForm Z-SN-IKZN PM-TIN-80                                                                                  | InnoForm Z/E-SN PM-TIN-80                                                          | InnoForm Z/E-SN-IKZ PM-TIN-80                                                      | HM-InnoForm Z-SN-IKZ TIN-80                                                                                    | HM-InnoForm Z/E-SN-IKZ TIN-80                                                      |
| MF                     |  | C / 2-3                                                                                                      | C / 2-3                                                                                                      | C / 2-3                                                                                                      | C / 2-3                                                                                                      | C / 2-3                                                                                                      | C / 2-3                                                                                                       | E / 1,5-2                                                                          | E / 1,5-2                                                                          | C / 2-3                                                                                                        | E / 1,5-2                                                                          |
| UNC                    | Gewindetiefe und Lochform<br>Thread depth and hole type                           | max. 3 x d <sub>1</sub><br> | max. 4 x d <sub>1</sub><br> | max. 4 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> |                                                                                    |                                                                                    | max. 3 x d <sub>1</sub><br> |                                                                                    |
| UNF                    | M                                                                                 | 332                                                                                                          | 333                                                                                                          | 333                                                                                                          | 324, 326, 329, 331                                                                                           | 324, 326, 329, 331                                                                                           | 324, 330                                                                                                      | 324, 330                                                                           | 325, 330                                                                           | 325                                                                                                            | 325                                                                                |
|                        | MF                                                                                |                                                                                                              |                                                                                                              |                                                                                                              | 335, 339                                                                                                     | 335, 339                                                                                                     |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | UNC                                                                               |                                                                                                              |                                                                                                              |                                                                                                              | 341, 343                                                                                                     | 341, 343                                                                                                     |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | UNF                                                                               |                                                                                                              |                                                                                                              |                                                                                                              | 345, 347                                                                                                     | 345, 347                                                                                                     |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | G                                                                                 |                                                                                                              |                                                                                                              |                                                                                                              | 349                                                                                                          | 349                                                                                                          |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | NPSM, NPSF                                                                        |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | NPT, NPTF, Rc                                                                     |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | W                                                                                 |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | BSW, BSF                                                                          |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | Pg                                                                                |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | MJ                                                                                |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | UNJC, UNJF                                                                        |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | EG (STI)                                                                          |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | LK-M                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | Tr, Tr-F, Rd                                                                      |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
| v <sub>c</sub> [m/min] |                                                                                   | min. empf. max.<br>rec.                                                                                      | min. empf. max.<br>rec.                                                                                      | min. empf. max.<br>rec.                                                                                      | min. empf. max.<br>rec.                                                                                      | min. empf. max.<br>rec.                                                                                      | min. empf. max.<br>rec.                                                                                       | min. empf. max.<br>rec.                                                            | min. empf. max.<br>rec.                                                            | min. empf. max.<br>rec.                                                                                        | min. empf. max.<br>rec.                                                            |
| P                      | 1.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              | 15 <b>30</b> 45                                                                                              | 15 <b>30</b> 45                                                                                              | 15 <b>30</b> 45                                                                                               | 15 <b>30</b> 45                                                                    | 15 <b>30</b> 45                                                                    | 15 <b>30</b> 45                                                                                                | 15 <b>30</b> 45                                                                    |
|                        | 2.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              | 10 <b>20</b> 40                                                                                              | 10 <b>20</b> 40                                                                                              | 10 <b>20</b> 40                                                                                               | 10 <b>20</b> 40                                                                    | 10 <b>20</b> 40                                                                    | 10 <b>20</b> 40                                                                                                | 10 <b>20</b> 40                                                                    |
|                        | 3.1                                                                               | 10 <b>15</b> 25                                                                                              | 10 <b>15</b> 25                                                                                              | 10 <b>15</b> 25                                                                                              | 10 <b>15</b> 25                                                                                              | 10 <b>15</b> 25                                                                                              | 10 <b>15</b> 25                                                                                               | 10 <b>15</b> 25                                                                    | 10 <b>15</b> 25                                                                    | 10 <b>15</b> 25                                                                                                | 10 <b>15</b> 25                                                                    |
|                        | 4.1                                                                               | 5 <b>10</b> 20                                                                                               | 5 <b>10</b> 20                                                                                               | 5 <b>10</b> 20                                                                                               | 5 <b>10</b> 20                                                                                               | 5 <b>10</b> 20                                                                                               | 5 <b>10</b> 20                                                                                                | 5 <b>10</b> 20                                                                     | 5 <b>10</b> 20                                                                     | 5 <b>10</b> 20                                                                                                 | 5 <b>10</b> 20                                                                     |
|                        | 5.1                                                                               | 5 <b>10</b> 15                                                                                               | 5 <b>10</b> 15                                                                                               | 5 <b>10</b> 15                                                                                               |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
| M                      | 1.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 2.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 3.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 4.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
| K                      | 1.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 1.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 2.1                                                                               | 20 <b>30</b> 60                                                                                              | 20 <b>30</b> 60                                                                                              | 20 <b>30</b> 60                                                                                              | 20 <b>30</b> 60                                                                                              | 20 <b>30</b> 60                                                                                              | 20 <b>30</b> 60                                                                                               | 20 <b>30</b> 60                                                                    | 20 <b>30</b> 60                                                                    | 20 <b>30</b> 60                                                                                                | 20 <b>30</b> 60                                                                    |
|                        | 2.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 3.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 3.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 4.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 4.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 4.3                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
| N                      | 1.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 1.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 1.3                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 1.4                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 1.5                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 1.6                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 2.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 2.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              | 10 <b>20</b> 40                                                                                              | 10 <b>20</b> 40                                                                                              | 10 <b>20</b> 40                                                                                               | 10 <b>20</b> 40                                                                    | 10 <b>20</b> 40                                                                    | 10 <b>20</b> 40                                                                                                | 10 <b>20</b> 40                                                                    |
|                        | 2.3                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 2.4                                                                               |                                                                                                              |                                                                                                              |                                                                                                              | 5 <b>10</b> 20                                                                                               | 5 <b>10</b> 20                                                                                               | 5 <b>10</b> 20                                                                                                | 5 <b>10</b> 20                                                                     | 5 <b>10</b> 20                                                                     | 5 <b>10</b> 20                                                                                                 | 5 <b>10</b> 20                                                                     |
|                        | 2.5                                                                               |                                                                                                              |                                                                                                              |                                                                                                              | 5 <b>10</b> 20                                                                                               | 5 <b>10</b> 20                                                                                               | 5 <b>10</b> 20                                                                                                | 5 <b>10</b> 20                                                                     | 5 <b>10</b> 20                                                                     | 5 <b>10</b> 20                                                                                                 | 5 <b>10</b> 20                                                                     |
|                        | 2.6                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 2.7                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 2.8                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 3.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 3.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 4.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 4.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 4.3                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 4.4                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
| S                      | 5.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 5.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 5.3                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 1.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 1.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 1.3                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 2.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
| H                      | 2.2                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 2.3                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 2.4                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 2.5                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 2.6                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |
|                        | 1.1                                                                               |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                               |                                                                                    |                                                                                    |                                                                                                                |                                                                                    |



## Gewindekernloch-Vorfertigungsdurchmesser für Gewindeformer

Die empfohlenen Vorfertigungsdurchmesser ermöglichen einen ausgeformten Kerndurchmesser innerhalb der Toleranz (bei M und MF nach DIN 13-50). Voraussetzung ist stabile Werkzeug- und Werkstückspannung sowie Verwendung von neuwertigen VHM-Spiralbohrern.

Zur Standzeitorientierung kann auch mit größeren Vorfertigungsdurchmessern gearbeitet werden. Es muss jedoch sichergestellt sein, dass die Kerndurchmesser-Toleranz eingehalten wird (bei M und MF nach DIN 13-50).

Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei  $P \geq 1$  mm bzw. 24 Gg./1" um 0,05 mm kleiner vorzubohren.

Die empfohlenen Vorfertigungsdurchmesser sind sorgfältig ermittelt und in der Praxis geprüft. In seltenen Fällen kann es vorkommen, dass die empfohlenen Vorfertigungsdurchmesser nicht zum gewünschten Innengewinde-Kerndurchmesser führen. In diesen Fällen sind die geeigneten Vorfertigungsdurchmesser im Versuch zu ermitteln.

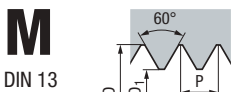
## Thread hole preparatory diameter for cold-forming taps

The recommended preparatory diameters enable a cold-formed minor diameter of the thread within tolerance (for M and MF according to DIN 13-50). Preconditions include a stable clamping of tool and workpiece as well as solid carbide twist drills which are new or as good as new.

In order to optimise tool life, larger thread hole preparatory diameters may be used. But it is necessary to ensure that the minor diameter of the thread complies with the tolerance (for M and MF according to DIN 13-50).

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for  $P \geq 1$  mm respectively from 24 threads/1".

The recommended preparatory diameters were carefully determined and tested in the field. In rare cases it may happen that the recommended preparatory diameters do not provide the desired minor diameter of the internal thread. In such cases the suitable preparatory diameters must be determined in tests.



DIN 13

| Nenngröße<br>Nom. size |         | D <sub>1</sub> (6H) *) |            |                     |
|------------------------|---------|------------------------|------------|---------------------|
| D<br>mm                | P<br>mm | min.<br>mm             | max.<br>mm | empf.<br>rec.<br>mm |
| <b>M</b> 1             | 0,25    | 0,89                   | 0,93       | <b>0,9</b>          |
| 1,1                    | 0,25    | 0,99                   | 1,03       | <b>1</b>            |
| 1,2                    | 0,25    | 1,09                   | 1,13       | <b>1,1</b>          |
| 1,4                    | 0,3     | 1,27                   | 1,31       | <b>1,28</b>         |
| 1,6                    | 0,35    | 1,46                   | 1,50       | <b>1,47</b>         |
| 1,7                    | 0,35    | 1,56                   | 1,60       | <b>1,57</b>         |
| 1,8                    | 0,35    | 1,66                   | 1,70       | <b>1,67</b>         |
| 2                      | 0,4     | 1,84                   | 1,88       | <b>1,85</b>         |
| 2,2                    | 0,45    | 2,02                   | 2,06       | <b>2,03</b>         |
| 2,3                    | 0,4     | 2,14                   | 2,18       | <b>2,15</b>         |
| 2,5                    | 0,45    | 2,32                   | 2,36       | <b>2,33</b>         |
| 2,6                    | 0,45    | 2,42                   | 2,46       | <b>2,43</b>         |
| 3                      | 0,5     | 2,79                   | 2,83       | <b>2,8</b>          |
| 3,5                    | 0,6     | 3,24                   | 3,28       | <b>3,25</b>         |
| 4                      | 0,7     | 3,69                   | 3,73       | <b>3,7</b>          |
| 4,5                    | 0,75    | 4,16                   | 4,23       | <b>4,2</b>          |
| 5                      | 0,8     | 4,64                   | 4,68       | <b>4,65</b>         |
| 5,5                    | 0,9     | 5,09                   | 5,13       | <b>5,1</b>          |
| 6                      | 1       | 5,55                   | 5,63       | <b>5,6</b>          |
| 7                      | 1       | 6,55                   | 6,64       | <b>6,6</b>          |
| 8                      | 1,25    | 7,41                   | 7,49       | <b>7,45</b>         |
| 9                      | 1,25    | 8,41                   | 8,49       | <b>8,45</b>         |
| 10                     | 1,5     | 9,28                   | 9,39       | <b>9,35</b>         |
| 12                     | 1,75    | 11,16                  | 11,29      | <b>11,25</b>        |
| 14                     | 2       | 13,02                  | 13,14      | <b>13,1</b>         |
| 16                     | 2       | 15,02                  | 15,14      | <b>15,1</b>         |
| 18                     | 2,5     | 16,73                  | 16,89      | <b>16,85</b>        |
| 20                     | 2,5     | 18,73                  | 18,90      | <b>18,85</b>        |
| 22                     | 2,5     | 20,73                  | 20,90      | <b>20,85</b>        |
| 24                     | 3       | 22,47                  | 22,65      | <b>22,6</b>         |
| 27                     | 3       | 25,47                  | 25,65      | <b>25,6</b>         |
| 30                     | 3,5     | 28,19                  | 28,40      | <b>28,35</b>        |
| 33                     | 3,5     | 31,19                  | 31,41      | <b>31,35</b>        |
| 36                     | 4       | 33,92                  | 34,16      | <b>34,1</b>         |
| 39                     | 4       | 36,92                  | 37,16      | <b>37,1</b>         |
| 42                     | 4,5     | 39,64                  | 39,91      | <b>39,85</b>        |
| 45                     | 4,5     | 42,64                  | 42,91      | <b>42,85</b>        |
| 48                     | 5       | 45,37                  | 45,71      | <b>45,65</b>        |

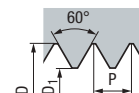


DIN 13

| Nenngröße<br>Nom. size |         | D <sub>1</sub> (6H) |            |                     |
|------------------------|---------|---------------------|------------|---------------------|
| D<br>mm                | P<br>mm | min.<br>mm          | max.<br>mm | empf.<br>rec.<br>mm |
| <b>M</b> 2,5 x         | 0,35    | 2,36                | 2,40       | <b>2,37</b>         |
| 2,6 x                  | 0,35    | 2,46                | 2,50       | <b>2,47</b>         |
| 3 x                    | 0,35    | 2,87                | 2,91       | <b>2,88</b>         |
| 3,5 x                  | 0,35    | 3,37                | 3,41       | <b>3,38</b>         |
| 4 x                    | 0,5     | 3,79                | 3,83       | <b>3,8</b>          |
| 5 x                    | 0,5     | 4,79                | 4,83       | <b>4,8</b>          |
| 6 x                    | 0,5     | 5,80                | 5,83       | <b>5,8</b>          |
| 6 x                    | 0,75    | 5,67                | 5,73       | <b>5,7</b>          |
| 7 x                    | 0,75    | 6,67                | 6,74       | <b>6,7</b>          |
| 8 x                    | 0,75    | 7,67                | 7,74       | <b>7,7</b>          |
| 8 x                    | 1       | 7,55                | 7,64       | <b>7,6</b>          |
| 9 x                    | 0,75    | 8,67                | 8,74       | <b>8,7</b>          |
| 9 x                    | 1       | 8,55                | 8,64       | <b>8,6</b>          |
| 10 x                   | 0,75    | 9,67                | 9,74       | <b>9,7</b>          |
| 10 x                   | 1       | 9,55                | 9,64       | <b>9,6</b>          |
| 10 x                   | 1,25    | 9,41                | 9,49       | <b>9,45</b>         |
| 11 x                   | 1       | 10,55               | 10,64      | <b>10,6</b>         |
| 12 x                   | 1       | 11,55               | 11,64      | <b>11,6</b>         |
| 12 x                   | 1,25    | 11,43               | 11,49      | <b>11,45</b>        |
| 12 x                   | 1,5     | 11,29               | 11,39      | <b>11,35</b>        |
| 14 x                   | 1       | 13,55               | 13,64      | <b>13,6</b>         |
| 14 x                   | 1,25    | 13,43               | 13,49      | <b>13,45</b>        |
| 14 x                   | 1,5     | 13,29               | 13,39      | <b>13,35</b>        |
| 15 x                   | 1       | 14,55               | 14,64      | <b>14,6</b>         |
| 16 x                   | 1       | 15,55               | 15,64      | <b>15,6</b>         |
| 16 x                   | 1,5     | 15,29               | 15,39      | <b>15,35</b>        |
| 18 x                   | 1       | 17,55               | 17,64      | <b>17,6</b>         |
| 18 x                   | 1,5     | 17,29               | 17,39      | <b>17,35</b>        |
| 18 x                   | 2       | 17,02               | 17,14      | <b>17,1</b>         |
| 20 x                   | 1       | 19,55               | 19,65      | <b>19,6</b>         |
| 20 x                   | 1,5     | 19,29               | 19,40      | <b>19,35</b>        |
| 20 x                   | 2       | 19,02               | 19,15      | <b>19,1</b>         |
| 24 x                   | 2       | 23,03               | 23,15      | <b>23,1</b>         |
| 30 x                   | 2       | 29,03               | 29,15      | <b>29,1</b>         |
| 36 x                   | 3       | 34,47               | 34,66      | <b>34,6</b>         |
| 42 x                   | 4       | 39,92               | 40,16      | <b>40,1</b>         |
| 48 x                   | 3       | 46,48               | 46,66      | <b>46,6</b>         |
| 48 x                   | 4       | 45,93               | 46,21      | <b>46,15</b>        |

## UNC

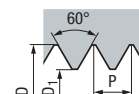
ASME B1.1



| Nenngröße<br>Nom. size |                  | D <sub>1</sub> (2B) |            |                     |
|------------------------|------------------|---------------------|------------|---------------------|
| D<br>inch              | P<br>Gg/1" (tpi) | min.<br>mm          | max.<br>mm | empf.<br>rec.<br>mm |
| Nr. 4                  | - 40             | 2,55                | 2,58       | <b>2,55</b>         |
| Nr. 5                  | - 40             | 2,88                | 2,93       | <b>2,9</b>          |
| Nr. 6                  | - 32             | 3,12                | 3,18       | <b>3,15</b>         |
| Nr. 8                  | - 32             | 3,79                | 3,83       | <b>3,8</b>          |
| Nr. 10                 | - 24             | 4,31                | 4,38       | <b>4,35</b>         |
| Nr. 12                 | - 24             | 4,97                | 5,03       | <b>5</b>            |
| 1/4                    | - 20             | 5,72                | 5,78       | <b>5,75</b>         |
| 5/16                   | - 18             | 7,23                | 7,34       | <b>7,3</b>          |
| 3/8                    | - 16             | 8,73                | 8,84       | <b>8,8</b>          |
| 7/16                   | - 14             | 10,20               | 10,29      | <b>10,25</b>        |
| 1/2                    | - 13             | 11,71               | 11,84      | <b>11,8</b>         |
| 9/16                   | - 12             | 13,21               | 13,34      | <b>13,3</b>         |
| 5/8                    | - 11             | 14,70               | 14,84      | <b>14,8</b>         |
| 3/4                    | - 10             | 17,73               | 17,89      | <b>17,85</b>        |
| 7/8                    | - 9              | 20,75               | 20,95      | <b>20,9</b>         |
| 1"                     | - 8              | 23,74               | 23,95      | <b>23,9</b>         |

## UNF

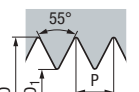
ASME B1.1



| Nenngröße<br>Nom. size |                  | D <sub>1</sub> (2B) |            |                     |
|------------------------|------------------|---------------------|------------|---------------------|
| D<br>inch              | P<br>Gg/1" (tpi) | min.<br>mm          | max.<br>mm | empf.<br>rec.<br>mm |
| Nr. 2                  | - 64             | 2,01                | 2,05       | <b>2,02</b>         |
| Nr. 3                  | - 56             | 2,31                | 2,35       | <b>2,32</b>         |
| Nr. 4                  | - 48             | 2,60                | 2,65       | <b>2,62</b>         |
| Nr. 5                  | - 44             | 2,91                | 2,95       | <b>2,92</b>         |
| Nr. 6                  | - 40             | 3,21                | 3,25       | <b>3,22</b>         |
| Nr. 8                  | - 36             | 3,83                | 3,88       | <b>3,85</b>         |
| Nr. 10                 | - 32             | 4,45                | 4,48       | <b>4,45</b>         |
| Nr. 12                 | - 28             | 5,05                | 5,13       | <b>5,1</b>          |
| 1/4                    | - 28             | 5,92                | 5,98       | <b>5,95</b>         |
| 5/16                   | - 24             | 7,43                | 7,49       | <b>7,45</b>         |
| 3/8                    | - 24             | 9,02                | 9,09       | <b>9,05</b>         |
| 7/16                   | - 20             | 10,49               | 10,59      | <b>10,55</b>        |
| 1/2                    | - 20             | 12,08               | 12,19      | <b>12,15</b>        |
| 9/16                   | - 18             | 13,60               | 13,69      | <b>13,65</b>        |
| 5/8                    | - 18             | 15,19               | 15,29      | <b>15,25</b>        |
| 3/4                    | - 16             | 18,27               | 18,40      | <b>18,35</b>        |
| 7/8                    | - 14             | 21,33               | 21,45      | <b>21,4</b>         |
| 1"                     | - 12             | 24,34               | 24,50      | <b>24,45</b>        |

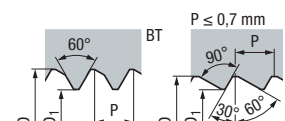
## G (BSP)

DIN EN ISO 228



| Nenngröße<br>Nom. size |                  | D <sub>1</sub> |            |                     |
|------------------------|------------------|----------------|------------|---------------------|
| D                      | P<br>Gg/1" (tpi) | min.<br>mm     | max.<br>mm | empf.<br>rec.<br>mm |
| <b>G</b> 1/16          | - 28             | 7,25           | 7,29       | <b>7,25</b>         |
| 1/8                    | - 28             | 9,25           | 9,29       | <b>9,25</b>         |
| 1/4                    | - 19             | 12,48          | 12,59      | <b>12,55</b>        |
| 3/8                    | - 19             | 15,99          | 16,09      | <b>16,05</b>        |
| 1/2                    | - 14             | 20,02          | 20,15      | <b>20,1</b>         |
| 5/8                    | - 14             | 21,97          | 22,10      | <b>22,05</b>        |
| 3/4                    | - 14             | 25,50          | 25,65      | <b>25,6</b>         |
| 7/8                    | - 14             | 29,26          | 29,40      | <b>29,35</b>        |
| 1"                     | - 11             | 32,05          | 32,21      | <b>32,15</b>        |

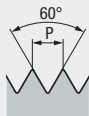
## LK-M

EMUGE-Norm  
EMUGE standard

| Nenngröße<br>Nom. size |         | D <sub>1</sub> |            |                     |
|------------------------|---------|----------------|------------|---------------------|
| D<br>mm                | P<br>mm | min.<br>mm     | max.<br>mm | empf.<br>rec.<br>mm |
| <b>LK-M</b> 3          | 0,5     | 2,82           | 2,88       | <b>2,85</b>         |
| 4                      | 0,7     | 3,77           | 3,83       | <b>3,8</b>          |
| 5                      | 0,8     | 4,77           | 4,83       | <b>4,8</b>          |
| 6                      | 1       | 5,70           | 5,78       | <b>5,7</b>          |
| 8                      | 1,25    | 7,58           | 7,68       | <b>7,6</b>          |
| 10                     | 1,5     | 9,48           | 9,58       | <b>9,5</b>          |

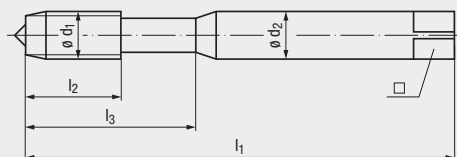
\*)  $P \leq 0,3$  mm = Tol. 5H

**M**  
DIN 13



DIN  
2174

**STEEL**  
Steel  
materials

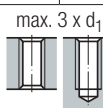


Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

Technische Informationen  
Technical information



Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 312

|                                              |                                           |                                              |                                           |
|----------------------------------------------|-------------------------------------------|----------------------------------------------|-------------------------------------------|
| <b>P</b> 2.1<br><b>K</b> 2.1<br><b>N</b> 1.5 | <b>P</b> 1.1-3.1<br><b>N</b> 1.5-1.6, 2.2 | <b>P</b> 2.1<br><b>K</b> 2.1<br><b>N</b> 1.5 | <b>P</b> 1.1-3.1<br><b>N</b> 1.5-1.6, 2.2 |
|----------------------------------------------|-------------------------------------------|----------------------------------------------|-------------------------------------------|

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |       | Drück<br>1-STEEL<br>NT | Drück<br>1-STEEL<br>TIN | Drück<br>1-STEEL-SN<br>NT | Drück<br>1-STEEL-SN<br>TIN |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|------------------------|-------------------------|---------------------------|----------------------------|
| <b>M</b> 1             | 0,25    | 40             | 5              | –              | 2,5              | 2,1 | 0,9   | <b>B0911000.0010</b>   |                         |                           |                            |
| 1,1                    | 0,25    | 40             | 5              | –              | 2,5              | 2,1 | 1     | <b>B0911000.0011</b>   |                         |                           |                            |
| 1,2                    | 0,25    | 40             | 5              | –              | 2,5              | 2,1 | 1,1   | <b>B0911000.0012</b>   |                         |                           |                            |
| 1,4                    | 0,3     | 40             | 6              | –              | 2,5              | 2,1 | 1,28  | <b>B0911000.0014</b>   |                         |                           |                            |
| 1,6                    | 0,35    | 40             | 6              | 11             | 2,5              | 2,1 | 1,47  | <b>B0911000.0016</b>   | <b>B0911400.0016</b>    |                           |                            |
| 1,7                    | 0,35    | 40             | 6              | 11             | 2,5              | 2,1 | 1,57  | <b>B0911000.0017</b>   |                         |                           |                            |
| 1,8                    | 0,35    | 40             | 6              | 11             | 2,5              | 2,1 | 1,67  | <b>B0911000.0018</b>   |                         |                           |                            |
| 2                      | 0,4     | 45             | 7              | 12             | 2,8              | 2,1 | 1,85  | <b>B0911000.0020</b>   | <b>B0911400.0020</b>    | B0921000.0020             | <b>B0921400.0020</b>       |
| 2,2                    | 0,45    | 45             | 7              | 12             | 2,8              | 2,1 | 2,03  | <b>B0911000.0022</b>   |                         | B0921000.0022             |                            |
| 2,3                    | 0,4     | 45             | 7              | 12             | 2,8              | 2,1 | 2,15  | <b>B0911000.0023</b>   |                         | B0921000.0023             |                            |
| 2,5                    | 0,45    | 50             | 9              | 14             | 2,8              | 2,1 | 2,33  | <b>B0911000.0025</b>   | <b>B0911400.0025</b>    | B0921000.0025             | <b>B0921400.0025</b>       |
| 2,6                    | 0,45    | 50             | 9              | 14             | 2,8              | 2,1 | 2,43  | <b>B0911000.0026</b>   | B0911400.0026           | B0921000.0026             | B0921400.0026              |
| 3                      | 0,5     | 56             | 11             | 18             | 3,5              | 2,7 | 2,8   | <b>B0911000.0030</b>   | <b>B0911400.0030</b>    | <b>B0921000.0030</b>      | <b>B0921400.0030</b>       |
| 3,5                    | 0,6     | 56             | 12             | 20             | 4                | 3   | 3,25  | <b>B0911000.0035</b>   | <b>B0911400.0035</b>    | B0921000.0035             | <b>B0921400.0035</b>       |
| 4                      | 0,7     | 63             | 13             | 21             | 4,5              | 3,4 | 3,7   | <b>B0911000.0040</b>   | <b>B0911400.0040</b>    | <b>B0921000.0040</b>      | <b>B0921400.0040</b>       |
| 4,5                    | 0,75    | 70             | 14             | 25             | 6                | 4,9 | 4,2   |                        |                         |                           |                            |
| 5                      | 0,8     | 70             | 15             | 25             | 6                | 4,9 | 4,65  | <b>B0911000.0050</b>   | <b>B0911400.0050</b>    | <b>B0921000.0050</b>      | <b>B0921400.0050</b>       |
| 5,5                    | 0,9     | 80             | 16             | 30             | 6                | 4,9 | 5,1   |                        |                         |                           |                            |
| 6                      | 1       | 80             | 17             | 30             | 6                | 4,9 | 5,6   | <b>B0911000.0060</b>   | <b>B0911400.0060</b>    | <b>B0921000.0060</b>      | <b>B0921400.0060</b>       |
| 7                      | 1       | 80             | 17             | 30             | 7                | 5,5 | 6,6   | <b>B0911000.0070</b>   | <b>B0911400.0070</b>    | B0921000.0070             | <b>B0921400.0070</b>       |
| 8                      | 1,25    | 90             | 20             | 35             | 8                | 6,2 | 7,45  | <b>B0911000.0080</b>   | <b>B0911400.0080</b>    | <b>B0921000.0080</b>      | <b>B0921400.0080</b>       |
| 9                      | 1,25    | 90             | 20             | 35             | 9                | 7   | 8,45  |                        |                         |                           |                            |
| 10                     | 1,5     | 100            | 22             | 39             | 10               | 8   | 9,35  | <b>B0911000.0100</b>   | <b>B0911400.0100</b>    | <b>B0921000.0100</b>      | <b>B0921400.0100</b>       |
| 12                     | 1,75    | 110            | 24             | 44             | 12               | 9   | 11,25 |                        |                         |                           |                            |
| DIN 2174               |         |                |                |                |                  |     |       |                        | 327                     | 327                       |                            |

<sup>\*)</sup> ≤ M1,4 Tol. 4HX/5HX



Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P ≥ 1 mm um 0,05 mm kleiner vorzubohren.

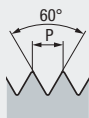
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P ≥ 1 mm.

For further information regarding the recommended preparatory diameters, see page 317.



**M**  
DIN 13

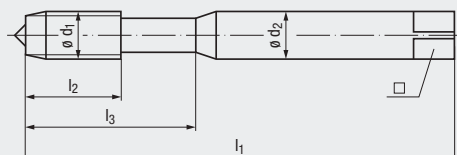


DIN  
2174

**STEEL**  
Steel materials



**VA**  
Stainless steel materials



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



6HX  
TIN-66  
HSSE-PM

E / 1,5-2  
E / 0

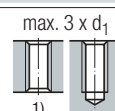
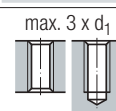
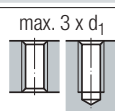
6HX  
TIN-T26  
HSSE-PM

E / 1,5-2  
E / 0 / P

6HX  
TIN-T26  
HSSE-PM

E / 1,5-2  
E / 0

Gewindetiefe und Lochform  
Thread depth and hole type



P 2.1-4.1

M 1.1-3.1

M 1.1-3.1

Einsatzgebiete – Material  
Applications – material

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| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |       | InnoForm<br>1-STEEL-M/E-SN<br>IKZN-PM-TIN-66 | InnoForm<br>1-VA/E-SN<br>PM-TIN-T26 | InnoForm<br>1-VA/E-SN-1KZ<br>PM-TIN-T26 |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|----------------------------------------------|-------------------------------------|-----------------------------------------|
| <b>M</b> 1             | 0,25    | 40             | 2,5            | —              | 2,5              | 2,1 | 0,9   |                                              |                                     |                                         |
| 1,1                    | 0,25    | 40             | 2,5            | —              | 2,5              | 2,1 | 1     |                                              |                                     |                                         |
| 1,2                    | 0,25    | 40             | 2,5            | —              | 2,5              | 2,1 | 1,1   |                                              |                                     |                                         |
| 1,4                    | 0,3     | 40             | 3              | —              | 2,5              | 2,1 | 1,28  |                                              |                                     |                                         |
| 1,6                    | 0,35    | 40             | 4              | 11             | 2,5              | 2,1 | 1,47  |                                              |                                     |                                         |
| 1,7                    | 0,35    | 40             | 4              | 11             | 2,5              | 2,1 | 1,57  |                                              |                                     |                                         |
| 1,8                    | 0,35    | 40             | 4              | 11             | 2,5              | 2,1 | 1,67  |                                              |                                     |                                         |
| 2                      | 0,4     | 45             | 4              | 12             | 2,8              | 2,1 | 1,85  |                                              |                                     |                                         |
| 2,2                    | 0,45    | 45             | 4,5            | 12             | 2,8              | 2,1 | 2,03  |                                              |                                     |                                         |
| 2,3                    | 0,4     | 45             | 4,5            | 12             | 2,8              | 2,1 | 2,15  |                                              |                                     |                                         |
| 2,5                    | 0,45    | 50             | 5              | 14             | 2,8              | 2,1 | 2,33  |                                              |                                     |                                         |
| 2,6                    | 0,45    | 50             | 5              | 14             | 2,8              | 2,1 | 2,43  |                                              |                                     |                                         |
| 3                      | 0,5     | 56             | 6              | 18             | 3,5              | 2,7 | 2,8   |                                              | B5296A00.0030                       |                                         |
| 3,5                    | 0,6     | 56             | 7              | 20             | 4                | 3   | 3,25  |                                              |                                     |                                         |
| 4                      | 0,7     | 63             | 7              | 21             | 4,5              | 3,4 | 3,7   | B5337F00.0040                                | B5296A00.0040                       | B5316A00.0040                           |
| 4,5                    | 0,75    | 70             | 8              | 25             | 6                | 4,9 | 4,2   |                                              |                                     |                                         |
| 5                      | 0,8     | 70             | 8              | 25             | 6                | 4,9 | 4,65  | B5337F00.0050                                | B5296A00.0050                       | B5316A00.0050                           |
| 5,5                    | 0,9     | 80             | 10             | 30             | 6                | 4,9 | 5,1   |                                              |                                     |                                         |
| 6                      | 1       | 80             | 10             | 30             | 6                | 4,9 | 5,6   | B5337F00.0060                                | B5296A00.0060                       | B5316A00.0060                           |
| 7                      | 1       | 80             | 10             | 30             | 7                | 5,5 | 6,6   |                                              |                                     |                                         |
| 8                      | 1,25    | 90             | 14             | 35             | 8                | 6,2 | 7,45  | B5337F00.0080                                | B5296A00.0080                       | B5316A00.0080                           |
| 9                      | 1,25    | 90             | 14             | 35             | 9                | 7   | 8,45  |                                              |                                     |                                         |
| 10                     | 1,5     | 100            | 16             | 39             | 10               | 8   | 9,35  | B5337F00.0100                                | B5296A00.0100                       | B5316A00.0100                           |
| 12                     | 1,75    | 110            | 18             | 44             | 12               | 9   | 11,25 |                                              |                                     |                                         |

DIN 2174



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1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication

2) Zum Patent angemeldet  
Patent pending

| AL<br>Aluminium<br>wrought alloys |                                       |                                     |                                         | GAL<br>Aluminium<br>cast alloys |                                     |                                      | Product<br>Finder |
|-----------------------------------|---------------------------------------|-------------------------------------|-----------------------------------------|---------------------------------|-------------------------------------|--------------------------------------|-------------------|
|                                   |                                       |                                     |                                         |                                 |                                     |                                      | V <sub>c</sub>    |
| <b>new</b>                        | <b>new</b>                            | <b>new</b>                          | <b>new</b>                              |                                 |                                     |                                      | M                 |
|                                   |                                       |                                     |                                         |                                 |                                     |                                      | MF                |
| 6HX *)<br>GLT-104<br>HSSE-PM      | 6HX<br>GLT-104<br>HSSE-PM             | 6HX<br>GLT-104<br>HSSE-PM           | 6HX<br>GLT-104<br>HSSE-PM               | 6HX<br>TICN<br>HSSE-PM          | 6HX<br>TICN<br>HSSE-PM              | 6HX<br>TICN<br>HSSE-PM               | UNC               |
| C / 2-3<br>E / O / P              | C / 2-3<br>E / O                      | E / 1,5-2<br>E / O / P              | E / 1,5-2<br>E / O                      | C / 2-3<br>E / O / P            | C / 2-3<br>E / O                    | C / 2-3<br>E / O                     | UNF               |
| max. 3 x d <sub>1</sub><br>       | max. 3 x d <sub>1</sub><br>           | max. 3 x d <sub>1</sub><br>         | max. 3 x d <sub>1</sub><br>             | max. 3 x d <sub>1</sub><br>     | max. 3 x d <sub>1</sub><br>         | max. 3 x d <sub>1</sub><br>          | G                 |
| N 1.1-1.4<br>N 2.1-2.2            | N 1.1-1.4<br>N 2.1-2.2                | N 1.1-1.4<br>N 2.1-2.2              | N 1.1-1.4<br>N 2.1-2.2                  | N 1.5-1.6                       | N 1.5-1.6                           | N 1.5-1.6                            | SELF-LOCK         |
| InnoForm<br>1-AL-SN<br>PM-GLT-104 | InnoForm<br>1-AL-SN-1KZ<br>PM-GLT-104 | InnoForm<br>1-AL-E-SN<br>PM-GLT-104 | InnoForm<br>1-AL-E-SN-1KZ<br>PM-GLT-104 | InnoForm<br>1-GAL-SN<br>PM-TICN | InnoForm<br>1-GAL-SN-1KZ<br>PM-TICN | InnoForm<br>1-GAL-SN-1KZN<br>PM-TICN |                   |
| B5211Q00.0010                     |                                       |                                     |                                         |                                 |                                     |                                      | M 1               |
| B5211Q00.0012                     |                                       |                                     |                                         |                                 |                                     |                                      | 1,1               |
| B5211Q00.0014                     |                                       |                                     |                                         |                                 |                                     |                                      | 1,2               |
| B5211Q00.0016                     |                                       |                                     |                                         |                                 |                                     |                                      | 1,4               |
|                                   |                                       |                                     |                                         |                                 |                                     |                                      | 1,6               |
|                                   |                                       |                                     |                                         |                                 |                                     |                                      | 1,7               |
| B5211Q00.0020                     |                                       | B5291Q00.0020                       |                                         |                                 |                                     |                                      | 1,8               |
|                                   |                                       |                                     |                                         |                                 |                                     |                                      | 2                 |
|                                   |                                       |                                     |                                         |                                 |                                     |                                      | 2,2               |
| B5211Q00.0025                     |                                       | B5291Q00.0025                       |                                         |                                 |                                     |                                      | 2,3               |
|                                   |                                       |                                     |                                         |                                 |                                     |                                      | 2,5               |
| B5211Q00.0030                     |                                       | B5291Q00.0030                       |                                         |                                 |                                     |                                      | 2,6               |
|                                   |                                       |                                     |                                         |                                 |                                     |                                      | 3                 |
| B5211Q00.0040                     | B5231Q00.0040                         | B5291Q00.0040                       | B5311Q00.0040                           |                                 |                                     |                                      | 3,5               |
|                                   |                                       |                                     |                                         |                                 |                                     |                                      | 4                 |
| B5211Q00.0050                     | B5231Q00.0050                         | B5291Q00.0050                       | B5311Q00.0050                           | B521Q200.0050                   | B523Q200.0050                       | B526Q200.0050                        | 4,5               |
|                                   |                                       |                                     |                                         |                                 |                                     |                                      | 5                 |
| B5211Q00.0060                     | B5231Q00.0060                         | B5291Q00.0060                       | B5311Q00.0060                           | B521Q200.0060                   | B523Q200.0060                       | B526Q200.0060                        | 5,5               |
|                                   |                                       |                                     |                                         |                                 |                                     |                                      | 6                 |
| B5211Q00.0080                     | B5231Q00.0080                         | B5291Q00.0080                       | B5311Q00.0080                           | B521Q200.0080                   | B523Q200.0080                       | B526Q200.0080                        | 7                 |
|                                   |                                       |                                     |                                         |                                 |                                     |                                      | 8                 |
| B5211Q00.0100                     | B5231Q00.0100                         | B5291Q00.0100                       | B5311Q00.0100                           | B521Q200.0100                   | B523Q200.0100                       | B526Q200.0100                        | 9                 |
|                                   |                                       |                                     |                                         |                                 |                                     |                                      | 10                |
|                                   |                                       |                                     |                                         |                                 |                                     |                                      | 12                |

\*) ≤ M1,4 Tol. 4HX/5HX



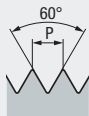
Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei  $P \geq 1$  mm um 0,05 mm kleiner vorzubohren.

Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for  $P \geq 1$  mm.

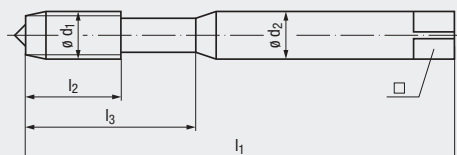
For further information regarding the recommended preparatory diameters, see page 317.

**M**  
DIN 13



DIN  
2174

**GAL**  
Aluminium  
cast alloys

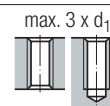
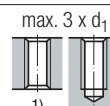
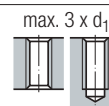


Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 312

**N 1.5-1.6**

**N 1.5-1.6**

**N 1.5-1.6**

|          | Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |       | InnoForm<br>1-GAL/E-SN<br>PM-TiCN | InnoForm<br>1-GAL/E-SN-1KZ<br>PM-TiCN | InnoForm<br>1-GAL/E-SN-1KZN<br>PM-TiCN |
|----------|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|-----------------------------------|---------------------------------------|----------------------------------------|
| <b>M</b> | 1                      | 0,25    | 40             | 5              | –              | 2,5              | 2,1 | 0,9   |                                   |                                       |                                        |
|          | 1,1                    | 0,25    | 40             | 5              | –              | 2,5              | 2,1 | 1     |                                   |                                       |                                        |
|          | 1,2                    | 0,25    | 40             | 5              | –              | 2,5              | 2,1 | 1,1   |                                   |                                       |                                        |
|          | 1,4                    | 0,3     | 40             | 6              | –              | 2,5              | 2,1 | 1,28  |                                   |                                       |                                        |
|          | 1,6                    | 0,35    | 40             | 6              | 11             | 2,5              | 2,1 | 1,47  |                                   |                                       |                                        |
|          | 1,7                    | 0,35    | 40             | 6              | 11             | 2,5              | 2,1 | 1,57  |                                   |                                       |                                        |
|          | 1,8                    | 0,35    | 40             | 6              | 11             | 2,5              | 2,1 | 1,67  |                                   |                                       |                                        |
|          | 2                      | 0,4     | 45             | 7              | 12             | 2,8              | 2,1 | 1,85  |                                   |                                       |                                        |
|          | 2,2                    | 0,45    | 45             | 7              | 12             | 2,8              | 2,1 | 2,03  |                                   |                                       |                                        |
|          | 2,3                    | 0,4     | 45             | 7              | 12             | 2,8              | 2,1 | 2,15  |                                   |                                       |                                        |
|          | 2,5                    | 0,45    | 50             | 9              | 14             | 2,8              | 2,1 | 2,33  |                                   |                                       |                                        |
|          | 2,6                    | 0,45    | 50             | 9              | 14             | 2,8              | 2,1 | 2,43  |                                   |                                       |                                        |
|          | 3                      | 0,5     | 56             | 11             | 18             | 3,5              | 2,7 | 2,8   |                                   |                                       |                                        |
|          | 3,5                    | 0,6     | 56             | 12             | 20             | 4                | 3   | 3,25  |                                   |                                       |                                        |
|          | 4                      | 0,7     | 63             | 13             | 21             | 4,5              | 3,4 | 3,7   |                                   |                                       |                                        |
|          | 4,5                    | 0,75    | 70             | 14             | 25             | 6                | 4,9 | 4,2   |                                   |                                       |                                        |
|          | 5                      | 0,8     | 70             | 15             | 25             | 6                | 4,9 | 4,65  | B529Q200.0050                     | B531Q200.0050                         | B533Q200.0050                          |
|          | 5,5                    | 0,9     | 80             | 16             | 30             | 6                | 4,9 | 5,1   |                                   |                                       |                                        |
|          | 6                      | 1       | 80             | 17             | 30             | 6                | 4,9 | 5,6   | B529Q200.0060                     | B531Q200.0060                         | B533Q200.0060                          |
|          | 7                      | 1       | 80             | 17             | 30             | 7                | 5,5 | 6,6   |                                   |                                       |                                        |
|          | 8                      | 1,25    | 90             | 20             | 35             | 8                | 6,2 | 7,45  | B529Q200.0080                     | B531Q200.0080                         | B533Q200.0080                          |
|          | 9                      | 1,25    | 90             | 20             | 35             | 9                | 7   | 8,45  |                                   |                                       |                                        |
|          | 10                     | 1,5     | 100            | 22             | 39             | 10               | 8   | 9,35  | B529Q200.0100                     | B531Q200.0100                         | B533Q200.0100                          |
|          | 12                     | 1,75    | 110            | 24             | 44             | 12               | 9   | 11,25 |                                   |                                       |                                        |
| DIN 2174 |                        |         |                |                |                |                  |     |       |                                   |                                       |                                        |

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication



Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P ≥ 1 mm um 0,05 mm kleiner vorzubohren.  
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P ≥ 1 mm.  
For further information regarding the recommended preparatory diameters, see page 317.

| SPEED<br>High-speed cutting             |                                             | NF<br>Non ferrous materials          |                                      | H<br>Materials of high tensile strength |                                       | Product Finder       |
|-----------------------------------------|---------------------------------------------|--------------------------------------|--------------------------------------|-----------------------------------------|---------------------------------------|----------------------|
|                                         |                                             |                                      |                                      |                                         |                                       | <b>V<sub>c</sub></b> |
|                                         |                                             |                                      |                                      |                                         |                                       | <b>M</b>             |
| 6HX<br>TICN<br>HSSE                     | 6HX<br>TICN<br><b>VHM</b>                   | 6HX<br>GLT-104<br>HSSE               | 6HX<br>GLT-104<br>HSSE               | 6HX<br>TIN-T26<br><b>HSSE-PM</b>        | 6HX<br>TIN-T26<br><b>HSSE-PM</b>      | <b>MF</b>            |
| E / 1,5-2<br>E / O                      | E / 1,5-2<br>E / O                          | C / 2-3<br>E / O / P                 | C / 2-3<br>E / O / P                 | C / 2-3<br>E / O / P                    | C / 2-3<br>E / O                      | <b>UNC</b>           |
|                                         |                                             |                                      |                                      |                                         |                                       | <b>UNF</b>           |
| <b>N 1.4-1.6</b>                        | <b>N 1.4-1.6</b>                            | <b>N 1.1-1.4</b><br><b>N 2.1-2.2</b> | <b>N 1.1-1.4</b><br><b>N 2.1-2.2</b> | <b>P 3.1-5.1</b><br><b>K 2.1</b>        | <b>P 3.1-5.1</b><br><b>K 2.1</b>      | <b>G</b>             |
| <b>Drück 1-GAL-SPEED/E SN-IKZN-TICN</b> | <b>VHM-Drück 1-GAL-SPEED/E SN-IKZN-TICN</b> | <b>Drück 1-NF GLT-104</b>            | <b>Drück 1-NF-SN GLT-104</b>         | <b>InnoForm 1-H-SN PM-TIN-T26</b>       | <b>InnoForm 1-H-SN-IKZ PM-TIN-T26</b> | <b>SELF-LOCK</b>     |
| B5059500.0040                           | B505Q800.0040                               | B0915G00.0020                        | B0925G00.0020                        |                                         |                                       | <b>M 1</b>           |
| B5059500.0050                           | B505Q800.0050                               | B0915G00.0025                        | B0925G00.0025                        | B521W700.0050                           | B523W700.0050                         | 1,1                  |
| B5059500.0060                           | B505Q800.0060                               | B0915G00.0030                        | B0925G00.0030                        | B521W700.0060                           | B523W700.0060                         | 1,2                  |
| B5059500.0080                           | B505Q800.0080                               | B0915G00.0035                        | B0925G00.0035                        | B521W700.0080                           | B523W700.0080                         | 1,4                  |
| B5059500.0100                           | B505Q800.0100                               | B0915G00.0040                        | B0925G00.0040                        | B521W700.0100                           | B523W700.0100                         | 1,6                  |
|                                         |                                             | B0915G00.0050                        | B0925G00.0050                        |                                         |                                       | 1,7                  |
|                                         |                                             | B0915G00.0060                        | B0925G00.0060                        |                                         |                                       | 1,8                  |
|                                         |                                             | B0915G00.0080                        | B0925G00.0080                        |                                         |                                       | 2                    |
|                                         |                                             | B0915G00.0100                        | B0925G00.0100                        |                                         |                                       | 2,2                  |
|                                         |                                             |                                      |                                      |                                         |                                       | 2,3                  |
|                                         |                                             |                                      |                                      |                                         |                                       | 2,5                  |
|                                         |                                             |                                      |                                      |                                         |                                       | 2,6                  |
|                                         |                                             |                                      |                                      |                                         |                                       | 3                    |
|                                         |                                             |                                      |                                      |                                         |                                       | 3,5                  |
|                                         |                                             |                                      |                                      |                                         |                                       | 4                    |
|                                         |                                             |                                      |                                      |                                         |                                       | 4,5                  |
|                                         |                                             |                                      |                                      |                                         |                                       | 5                    |
|                                         |                                             |                                      |                                      |                                         |                                       | 5,5                  |
|                                         |                                             |                                      |                                      |                                         |                                       | 6                    |
|                                         |                                             |                                      |                                      |                                         |                                       | 7                    |
|                                         |                                             |                                      |                                      |                                         |                                       | 8                    |
|                                         |                                             |                                      |                                      |                                         |                                       | 9                    |
|                                         |                                             |                                      |                                      |                                         |                                       | 10                   |
|                                         |                                             |                                      |                                      |                                         |                                       | 12                   |
|                                         |                                             |                                      |                                      |                                         |                                       |                      |

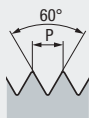


Spannzangen-Aufnahmen mit integrierter Übersetzung der Typenreihe Speedsynchro® Modular NFC siehe Seite 646 - 648

Collet holders with integrated transmission of our Speedsynchro® Modular NFC series, see page 646 - 648

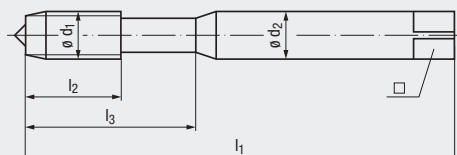


**M**  
DIN 13



DIN  
2174

**Z**  
CNC-controlled  
machines



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



6HX  
TIN-80  
HSSE-PM

6HX  
TIN-80  
HSSE-PM

6HX  
TIN-80  
HSSE-PM

6HX  
TIN-80  
HSSE-PM

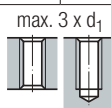
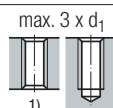
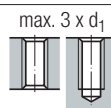
C / 2-3  
E / 0 / P

C / 2-3  
E / 0

C / 2-3  
E / 0

E / 1,5-2  
E / 0 / P

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 312

P 1.1-4.1  
K 2.1  
N 2.2, 2.4-2.5

P 1.1-4.1  
K 2.1  
N 2.2, 2.4-2.5

P 1.1-4.1  
K 2.1  
N 2.2, 2.4-2.5

P 1.1-4.1  
K 2.1  
N 2.2, 2.4-2.5

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |       | InnoForm<br>1-Z-SN<br>PM-TIN-80 | InnoForm<br>1-Z-SN-IKZ<br>PM-TIN-80 | InnoForm<br>1-Z-SN-IKZN<br>PM-TIN-80 | InnoForm<br>1-Z/E-SN<br>PM-TIN-80 |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|---------------------------------|-------------------------------------|--------------------------------------|-----------------------------------|
| <b>M</b> 1             | 0,25    | 40             | 2,5            | —              | 2,5              | 2,1 | 0,9   |                                 |                                     |                                      |                                   |
| 1,1                    | 0,25    | 40             | 2,5            | —              | 2,5              | 2,1 | 1     |                                 |                                     |                                      |                                   |
| 1,2                    | 0,25    | 40             | 2,5            | —              | 2,5              | 2,1 | 1,1   |                                 |                                     |                                      |                                   |
| 1,4                    | 0,3     | 40             | 3              | —              | 2,5              | 2,1 | 1,28  |                                 |                                     |                                      |                                   |
| 1,6                    | 0,35    | 40             | 4              | 11             | 2,5              | 2,1 | 1,47  | B521Z700.0016                   |                                     |                                      |                                   |
| 1,7                    | 0,35    | 40             | 4              | 11             | 2,5              | 2,1 | 1,57  |                                 |                                     |                                      |                                   |
| 1,8                    | 0,35    | 40             | 4              | 11             | 2,5              | 2,1 | 1,67  |                                 |                                     |                                      |                                   |
| 2                      | 0,4     | 45             | 4              | 12             | 2,8              | 2,1 | 1,85  | B521Z700.0020                   |                                     |                                      |                                   |
| 2,2                    | 0,45    | 45             | 4,5            | 12             | 2,8              | 2,1 | 2,03  |                                 |                                     |                                      |                                   |
| 2,3                    | 0,4     | 45             | 4,5            | 12             | 2,8              | 2,1 | 2,15  |                                 |                                     |                                      |                                   |
| 2,5                    | 0,45    | 50             | 5              | 14             | 2,8              | 2,1 | 2,33  | B521Z700.0025                   |                                     |                                      |                                   |
| 2,6                    | 0,45    | 50             | 5              | 14             | 2,8              | 2,1 | 2,43  |                                 |                                     |                                      |                                   |
| 3                      | 0,5     | 56             | 6              | 18             | 3,5              | 2,7 | 2,8   | B521Z700.0030                   |                                     |                                      | B529Z700.0030                     |
| 3,5                    | 0,6     | 56             | 7              | 20             | 4                | 3   | 3,25  |                                 |                                     |                                      |                                   |
| 4                      | 0,7     | 63             | 7              | 21             | 4,5              | 3,4 | 3,7   | B521Z700.0040                   | B523Z700.0040                       | B526Z700.0040                        | B529Z700.0040                     |
| 4,5                    | 0,75    | 70             | 8              | 25             | 6                | 4,9 | 4,2   |                                 |                                     |                                      |                                   |
| 5                      | 0,8     | 70             | 8              | 25             | 6                | 4,9 | 4,65  | B521Z700.0050                   | B523Z700.0050                       | B526Z700.0050                        | B529Z700.0050                     |
| 5,5                    | 0,9     | 80             | 10             | 30             | 6                | 4,9 | 5,1   |                                 |                                     |                                      |                                   |
| 6                      | 1       | 80             | 10             | 30             | 6                | 4,9 | 5,6   | B521Z700.0060                   | B523Z700.0060                       | B526Z700.0060                        | B529Z700.0060                     |
| 7                      | 1       | 80             | 10             | 30             | 7                | 5,5 | 6,6   |                                 |                                     |                                      |                                   |
| 8                      | 1,25    | 90             | 14             | 35             | 8                | 6,2 | 7,45  | B521Z700.0080                   | B523Z700.0080                       | B526Z700.0080                        | B529Z700.0080                     |
| 9                      | 1,25    | 90             | 14             | 35             | 9                | 7   | 8,45  |                                 |                                     |                                      |                                   |
| 10                     | 1,5     | 100            | 16             | 39             | 10               | 8   | 9,35  | B521Z700.0100                   | B523Z700.0100                       | B526Z700.0100                        | B529Z700.0100                     |
| 12                     | 1,75    | 110            | 18             | 44             | 12               | 9   | 11,25 |                                 |                                     |                                      |                                   |
| DIN 2174               |         |                |                |                |                  |     |       | 329                             | 329                                 | 330                                  | 330                               |

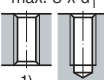
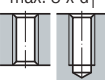
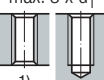
1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication



Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P ≥ 1 mm um 0,05 mm kleiner vorzubohren.  
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P ≥ 1 mm.  
For further information regarding the recommended preparatory diameters, see page 317.



| Z<br>CNC-controlled machines                                                                                  |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  |     |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|--|--|-----|
|                              |                              |                              |  |  |  |  |  |     |
|                              |                              |                              |  |  |  |  |  |     |
| 6HX<br>TIN-80<br>HSSE-PM                                                                                      | 6GX<br>TIN-80<br>HSSE-PM                                                                                      | 6HX<br>TIN-80<br>VHM                                                                                          | 6HX<br>TIN-80<br>VHM                                                              |  |  |  |  |     |
| E / 1,5-2<br>E / 0                                                                                            | C / 2-3<br>E / 0 / P                                                                                          | C / 2-3<br>E / 0                                                                                              | E / 1,5-2<br>E / 0                                                                |  |  |  |  |     |
| max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> |                                                                                   |  |  |  |  |     |
| P 1.1-4.1<br>K 2.1<br>N 2.2, 2.4-2.5                                                                          | P 1.1-4.1<br>K 2.1<br>N 2.2, 2.4-2.5                                                                          | P 1.1-4.1<br>K 2.1<br>N 2.2, 2.4-2.5                                                                          | P 1.1-4.1<br>K 2.1<br>N 2.2, 2.4-2.5                                              |  |  |  |  |     |
| InnoForm<br>1-Z/E-SN-IKZ<br>PM-TIN-80                                                                         | InnoForm<br>1-Z-SN<br>PM-TIN-80                                                                               | VHM-InnoForm<br>1-Z-SN-IKZ<br>TIN-80                                                                          | VHM-InnoForm<br>1-Z/E-SN-IKZ<br>TIN-80                                            |  |  |  |  |     |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | M 1 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 1,1 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 1,2 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 1,4 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 1,6 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 1,7 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 1,8 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 2   |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 2,2 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 2,3 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 2,5 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 2,6 |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 3   |
|                                                                                                               | B521Z720.0030                                                                                                 |                                                                                                               |                                                                                   |  |  |  |  | 3,5 |
| B531Z700.0040                                                                                                 | B521Z720.0040                                                                                                 |                                                                                                               |                                                                                   |  |  |  |  | 4   |
| B531Z700.0050                                                                                                 | B521Z720.0050                                                                                                 | B523Z800.0050                                                                                                 | B531Z800.0050                                                                     |  |  |  |  | 4,5 |
| B531Z700.0060                                                                                                 | B521Z720.0060                                                                                                 | B523Z800.0060                                                                                                 | B531Z800.0060                                                                     |  |  |  |  | 5   |
| B531Z700.0080                                                                                                 | B521Z720.0080                                                                                                 | B523Z800.0080                                                                                                 | B531Z800.0080                                                                     |  |  |  |  | 5,5 |
| B531Z700.0100                                                                                                 | B521Z720.0100                                                                                                 | B523Z800.0100                                                                                                 | B531Z800.0100                                                                     |  |  |  |  | 6   |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 7   |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 8   |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 9   |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 10  |
|                                                                                                               |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  | 12  |
|  330                       |                                                                                                               |                                                                                                               |                                                                                   |  |  |  |  |     |

Product  
Finder

V<sub>c</sub>

M

MF

UNC

UNF

G

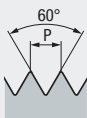
SELF-LOCK



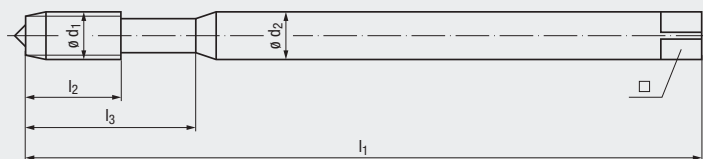
Werkzeug-Aufnahmen für  
Minimalmengenschmierung  
siehe Seite 677 - 698

Tool holders for  
minimum-quantity lubrication,  
see page 677 - 698

**M**  
DIN 13



Mit extra langem Schaft  
With extra long shank



**Z**  
CNC-controlled machines

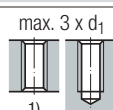
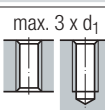


Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 312

**P** 1.1-4.1  
**K** 2.1  
**N** 2.2, 2.4-2.5

**P** 1.1-4.1  
**K** 2.1  
**N** 2.2, 2.4-2.5

| Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |      | InnoForm<br>1-Z-SN-LS<br>PM-TIN-80 | InnoForm<br>1-Z-SN-1KZ-LS<br>PM-TIN-80 |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|------------------------------------|----------------------------------------|
| <b>M</b> 3             | 0,5     | 100            | 6              | 18             | 3,5              | 2,7 | 2,8  | <b>B555Z700.0030</b>               |                                        |
| 4                      | 0,7     | 125            | 7              | 21             | 4,5              | 3,4 | 3,7  | <b>B555Z700.0040</b>               |                                        |
| 5                      | 0,8     | 140            | 8              | 25             | 6                | 4,9 | 4,65 | <b>B555Z700.0050</b>               | B544Z700.0050                          |
| 6                      | 1       | 160            | 10             | 30             | 6                | 4,9 | 5,6  | <b>B555Z700.0060</b>               | B544Z700.0060                          |
| 8                      | 1,25    | 180            | 14             | 35             | 8                | 6,2 | 7,45 | <b>B555Z700.0080</b>               | B544Z700.0080                          |
| 10                     | 1,5     | 200            | 16             | 39             | 10               | 8   | 9,35 | <b>B555Z700.0100</b>               | B544Z700.0100                          |
|                        |         |                |                |                |                  |     |      | 331                                | 331                                    |

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication

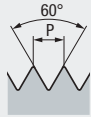
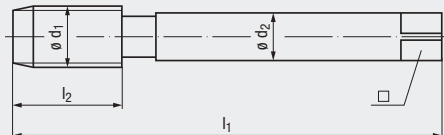


Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P ≥ 1 mm um 0,05 mm kleiner vorzubohren.  
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P ≥ 1 mm.  
For further information regarding the recommended preparatory diameters, see page 317.

**M**

DIN 13

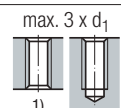
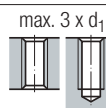
DIN  
2174Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

» 312

| $\emptyset d_1$<br>mm | P<br>mm | $l_1$ | $l_2$ | $\emptyset d_2$ | $\square$ |       |  | Drück<br>2-STEEL<br>TIN | Drück<br>2-STEEL-SN<br>TIN | InnoForm<br>2-STEEL-M-SN<br>PM-TIN-66 | InnoForm<br>2-STEEL-M-SN<br>IKZ-PM-TIN-66 |
|-----------------------|---------|-------|-------|-----------------|-----------|-------|--|-------------------------|----------------------------|---------------------------------------|-------------------------------------------|
| <b>M</b> 10           | 1,5     | 100   | 22    | 7               | 5,5       | 9,35  |  |                         |                            |                                       |                                           |
| 12                    | 1,75    | 110   | 24    | 9               | 7         | 11,25 |  |                         |                            |                                       |                                           |
| 14                    | 2       | 110   | 26    | 11              | 9         | 13,1  |  |                         |                            |                                       |                                           |
| 16                    | 2       | 110   | 27    | 12              | 9         | 15,1  |  |                         |                            |                                       |                                           |
| 18                    | 2,5     | 125   | 30    | 14              | 11        | 16,85 |  |                         |                            |                                       |                                           |
| 20                    | 2,5     | 140   | 32    | 16              | 12        | 18,85 |  |                         |                            |                                       |                                           |
| 22                    | 2,5     | 140   | 32    | 18              | 14,5      | 20,85 |  |                         |                            |                                       |                                           |
| 24                    | 3       | 160   | 34    | 18              | 14,5      | 22,6  |  |                         |                            |                                       |                                           |
| 27                    | 3       | 160   | 36    | 20              | 16        | 25,6  |  |                         |                            |                                       |                                           |
| 30                    | 3,5     | 180   | 40    | 22              | 18        | 28,35 |  |                         |                            |                                       |                                           |
| 33                    | 3,5     | 180   | 40    | 25              | 20        | 31,35 |  |                         |                            |                                       |                                           |
| 36                    | 4       | 200   | 50    | 28              | 22        | 34,1  |  |                         |                            |                                       |                                           |
| 39                    | 4       | 200   | 50    | 32              | 24        | 37,1  |  |                         |                            |                                       |                                           |
| 42                    | 4,5     | 200   | 56    | 32              | 24        | 39,85 |  |                         |                            |                                       |                                           |
| 45                    | 4,5     | 220   | 58    | 36              | 29        | 42,85 |  |                         |                            |                                       |                                           |
| 48                    | 5       | 250   | 65    | 36              | 29        | 45,65 |  |                         |                            |                                       |                                           |
| DIN 2174              |         |       |       |                 |           |       |  |                         |                            |                                       |                                           |

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication

2) Zum Patent angemeldet  
Patent pending

STEEL  
Steel  
materials6HX  
TIN  
HSSEC / 2-3  
E / O / P6HX  
TIN-66  
HSSE-PMC / 2-3  
E / O / P6HX  
TIN-66  
HSSE-PMC / 2-3  
E / O / P6HX  
TIN-66  
HSSE-PMC / 2-3  
E / OP 1.1-3.1  
N 1.5-1.6, 2.2P 1.1-3.1  
N 1.5-1.6, 2.2

P 2.1-5.1

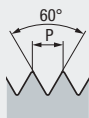
P 2.1-5.1

Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei  $P \geq 1$  mm um 0,05 mm kleiner vorzubohren.  
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for  $P \geq 1$  mm.

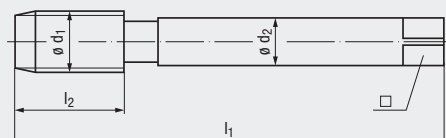
For further information regarding the recommended preparatory diameters, see page 317.

**M**  
DIN 13



DIN  
2174

**STEEL**  
Steel  
materials



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



6HX  
TIN-66  
HSSE-PM

C / 2-3  
E / 0

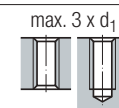
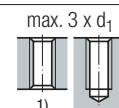
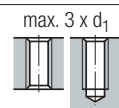
6HX  
TIN-66  
HSSE-PM

E / 1,5-2  
E / 0

6HX  
TIN-66  
HSSE-PM

E / 1,5-2  
E / 0

Gewindetiefe und Lochform  
Thread depth and hole type



P 2.1-5.1

P 2.1-5.1

P 2.1-5.1

Einsatzgebiete – Material  
Applications – material

» 312

|          | Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |       | InnoForm<br>2-STEEL-M-SN<br>IKZN-PM-TIN-66 | InnoForm<br>2-STEEL-M/E-SN<br>IKZ-PM-TIN-66 | InnoForm<br>2-STEEL-M/E-SN<br>IKZN-PM-TIN-66 |
|----------|------------------------|---------|----------------|----------------|------------------|------|-------|--------------------------------------------|---------------------------------------------|----------------------------------------------|
| <b>M</b> | 10                     | 1,5     | 100            | 22             | 7                | 5,5  | 9,35  |                                            |                                             |                                              |
|          | 12                     | 1,75    | 110            | 24             | 9                | 7    | 11,25 | C5267F00.0112                              | <b>C5317F00.0112</b>                        | C5337F00.0112                                |
|          | 14                     | 2       | 110            | 26             | 11               | 9    | 13,1  | C5267F00.0114                              | C5317F00.0114                               | C5337F00.0114                                |
|          | 16                     | 2       | 110            | 27             | 12               | 9    | 15,1  | C5267F00.0116                              | <b>C5317F00.0116</b>                        | C5337F00.0116                                |
|          | 18                     | 2,5     | 125            | 30             | 14               | 11   | 16,85 |                                            |                                             |                                              |
|          | 20                     | 2,5     | 140            | 32             | 16               | 12   | 18,85 | C5267F00.0120                              |                                             |                                              |
|          | 22                     | 2,5     | 140            | 32             | 18               | 14,5 | 20,85 |                                            |                                             |                                              |
|          | 24                     | 3       | 160            | 34             | 18               | 14,5 | 22,6  | C5267F00.0124                              |                                             |                                              |
|          | 27                     | 3       | 160            | 36             | 20               | 16   | 25,6  | C5267F00.0127                              |                                             |                                              |
|          | 30                     | 3,5     | 180            | 40             | 22               | 18   | 28,35 | C5267F00.0130                              |                                             |                                              |
|          | 33                     | 3,5     | 180            | 40             | 25               | 20   | 31,35 |                                            |                                             |                                              |
|          | 36                     | 4       | 200            | 50             | 28               | 22   | 34,1  | C5267F00.0136                              |                                             |                                              |
|          | 39                     | 4       | 200            | 50             | 32               | 24   | 37,1  |                                            |                                             |                                              |
|          | 42                     | 4,5     | 200            | 56             | 32               | 24   | 39,85 |                                            |                                             |                                              |
|          | 45                     | 4,5     | 220            | 58             | 36               | 29   | 42,85 |                                            |                                             |                                              |
|          | 48                     | 5       | 250            | 65             | 36               | 29   | 45,65 |                                            |                                             |                                              |
| DIN 2174 |                        |         |                |                |                  |      |       | 319                                        | 319                                         | 320                                          |

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication

2) Zum Patent angemeldet  
Patent pending



Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P ≥ 1 mm um 0,05 mm kleiner vorzubohren.  
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P ≥ 1 mm.  
For further information regarding the recommended preparatory diameters, see page 317.

| SPEED<br>High-speed cutting            |                                            | H<br>Materials of high tensile strength |                                      | Z<br>CNC-controlled machines         |                                      |
|----------------------------------------|--------------------------------------------|-----------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
|                                        |                                            |                                         |                                      |                                      |                                      |
|                                        |                                            |                                         |                                      |                                      |                                      |
| 6HX<br>TICN<br>HSSE                    | 6HX<br>TICN<br>KHM                         | 6HX<br>TIN-T26<br>HSSE-PM               | 6HX<br>TIN-T26<br>HSSE-PM            | 6HX<br>TIN-80<br>HSSE-PM             | 6HX<br>TIN-80<br>HSSE-PM             |
| E / 1,5-2<br>E / O                     | E / 1,5-2<br>E / O                         | C / 2-3<br>E / O / P                    | C / 2-3<br>E                         | C / 2-3<br>E / O / P                 | C / 2-3<br>E / O                     |
| max. 3 x d <sub>1</sub><br>            |                                            | max. 3 x d <sub>1</sub><br>             |                                      | max. 3 x d <sub>1</sub><br>          |                                      |
| N 1.4-1.6                              | N 1.4-1.6                                  | P 3.1-5.1<br>K 2.1                      | P 3.1-5.1<br>K 2.1                   | P 1.1-4.1<br>K 2.1<br>N 2.2, 2.4-2.5 | P 1.1-4.1<br>K 2.1<br>N 2.2, 2.4-2.5 |
| Drück<br>2-GAL-SPEED/E<br>SN-1KZN-TICN | KHM-Drück<br>2-GAL-SPEED/E<br>SN-1KZN-TICN | InnoForm<br>2-H-SN<br>PM-TIN-T26        | InnoForm<br>2-H-SN-1KZ<br>PM-TIN-T26 | InnoForm<br>2-Z-SN<br>PM-TIN-80      | InnoForm<br>2-Z-SN-1KZ<br>PM-TIN-80  |
| C5059500.0112                          | C505Q800.0112                              | C521W700.0112                           | C523W700.0112                        | C521Z700.0112                        | C523Z700.0112                        |
|                                        |                                            | C521W700.0116                           | C523W700.0116                        | C521Z700.0114                        | C523Z700.0114                        |
|                                        |                                            | C521W700.0120                           | C523W700.0120                        | C521Z700.0116                        | C523Z700.0116                        |
|                                        |                                            | C521W700.0124                           | C523W700.0124                        | C521Z700.0120                        | C523Z700.0120                        |
|                                        |                                            |                                         | C523W700.0127                        |                                      |                                      |
|                                        |                                            |                                         | C523W700.0130                        |                                      |                                      |
|                                        |                                            |                                         | C523W700.0133                        |                                      |                                      |
|                                        |                                            |                                         | C523W700.0136                        |                                      |                                      |
|                                        |                                            |                                         | C523W700.0139                        |                                      |                                      |
|                                        |                                            |                                         | C523W700.0142                        |                                      |                                      |
|                                        |                                            |                                         | C523W700.0145                        |                                      |                                      |
|                                        |                                            |                                         | C523W700.0148                        |                                      |                                      |
| 323                                    | 323                                        | 323                                     | 323                                  | 324                                  | 324                                  |

Product Finder

V<sub>c</sub>

M

MF

UNC

UNF

G

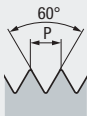
SELF-LOCK



Spiralbohrer siehe Seite 11 - 70

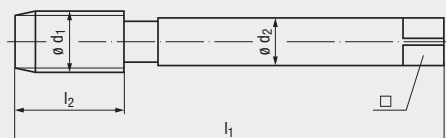
Twist drills, see page 11 - 70

**M**  
DIN 13



DIN  
2174

**Z**  
CNC-controlled  
machines



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



6HX  
TIN-80  
HSSE-PM

C / 2-3  
E / O

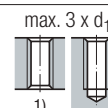
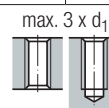
6HX  
TIN-80  
HSSE-PM

E / 1,5-2  
E / O / P

6HX  
TIN-80  
HSSE-PM

E / 1,5-2  
E / O

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 312

P 1.1-4.1  
K 2.1  
N 2.2, 2.4-2.5

P 1.1-4.1  
K 2.1  
N 2.2, 2.4-2.5

P 1.1-4.1  
K 2.1  
N 2.2, 2.4-2.5

|          | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |       | InnoForm<br>2-Z-SN-IKZN<br>PM-TIN-80 | InnoForm<br>2-Z/E-SN<br>PM-TIN-80 | InnoForm<br>2-Z/E-SN-IKZ<br>PM-TIN-80 |
|----------|------------------------|---------|----------------|----------------|------------------|------|-------|--------------------------------------|-----------------------------------|---------------------------------------|
| <b>M</b> | 10                     | 1,5     | 100            | 16             | 7                | 5,5  | 9,35  |                                      |                                   |                                       |
|          | 12                     | 1,75    | 110            | 18             | 9                | 7    | 11,25 | C526Z700.0112                        | C529Z700.0112                     | C531Z700.0112                         |
|          | 14                     | 2       | 110            | 20             | 11               | 9    | 13,1  | C526Z700.0114                        | C529Z700.0114                     | C531Z700.0114                         |
|          | 16                     | 2       | 110            | 22             | 12               | 9    | 15,1  | C526Z700.0116                        | C529Z700.0116                     | C531Z700.0116                         |
|          | 18                     | 2,5     | 125            | 25             | 14               | 11   | 16,85 |                                      |                                   |                                       |
|          | 20                     | 2,5     | 140            | 25             | 16               | 12   | 18,85 | C526Z700.0120                        |                                   |                                       |
|          | 22                     | 2,5     | 140            | 27             | 18               | 14,5 | 20,85 |                                      |                                   |                                       |
|          | 24                     | 3       | 160            | 30             | 18               | 14,5 | 22,6  |                                      |                                   |                                       |
|          | 27                     | 3       | 160            | 30             | 20               | 16   | 25,6  |                                      |                                   |                                       |
|          | 30                     | 3,5     | 180            | 35             | 22               | 18   | 28,35 |                                      |                                   |                                       |
|          | 33                     | 3,5     | 180            | 35             | 25               | 20   | 31,35 |                                      |                                   |                                       |
|          | 36                     | 4       | 200            | 40             | 28               | 22   | 34,1  |                                      |                                   |                                       |
|          | 39                     | 4       | 200            | 40             | 32               | 24   | 37,1  |                                      |                                   |                                       |
|          | 42                     | 4,5     | 200            | 45             | 32               | 24   | 39,85 |                                      |                                   |                                       |
|          | 45                     | 4,5     | 220            | 45             | 36               | 29   | 42,85 |                                      |                                   |                                       |
|          | 48                     | 5       | 250            | 50             | 36               | 29   | 45,65 |                                      |                                   |                                       |
| DIN 2174 |                        |         |                |                |                  |      |       | 324                                  | 324                               | 325                                   |

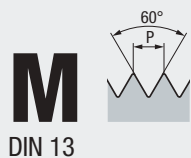


Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P ≥ 1 mm um 0,05 mm kleiner vorzubohren.

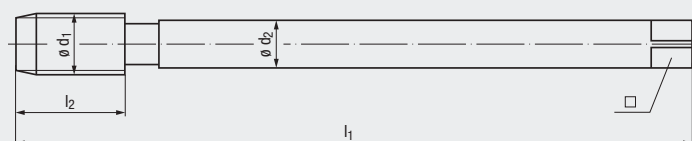
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P ≥ 1 mm.

For further information regarding the recommended preparatory diameters, see page 317.



Mit extra langem Schaft  
With extra long shank



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 312

| $\emptyset d_1$<br>mm | P<br>mm | $l_1$ | $l_2$ | $\emptyset d_2$ | $\square$ |       | InnoForm<br>2-Z-SN-LS<br>PM-TIN-80 | InnoForm<br>2-Z-SN-IKZ-LS<br>PM-TIN-80 |
|-----------------------|---------|-------|-------|-----------------|-----------|-------|------------------------------------|----------------------------------------|
| <b>M</b> 10           | 1,5     | 200   | 16    | 7               | 5,5       | 9,35  |                                    |                                        |
| 12                    | 1,75    | 224   | 18    | 9               | 7         | 11,25 | <b>C555Z700.0112</b>               | C544Z700.0112                          |
| 14                    | 2       | 224   | 20    | 11              | 9         | 13,1  | <b>C555Z700.0114</b>               | C544Z700.0114                          |
| 16                    | 2       | 224   | 22    | 12              | 9         | 15,1  | <b>C555Z700.0116</b>               | C544Z700.0116                          |
| 18                    | 2,5     | 250   | 25    | 14              | 11        | 16,85 |                                    |                                        |
| 20                    | 2,5     | 280   | 25    | 16              | 12        | 18,85 | C555Z700.0120                      | C544Z700.0120                          |
|                       |         |       |       |                 |           |       | » 326                              | » 326                                  |

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication



Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei  $P \geq 1$  mm um 0,05 mm kleiner vorzubohren.  
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for  $P \geq 1$  mm.  
For further information regarding the recommended preparatory diameters, see page 317.

Product  
Finder

V<sub>c</sub>

M

MF

UNC

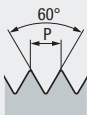
UNF

G

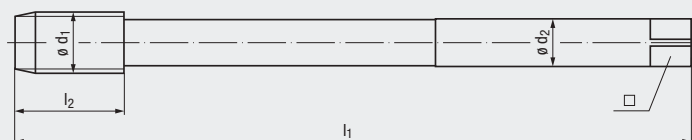
SELF-LOCK



**M**  
DIN 13



Für Gewindetiefen bis max.  $3 \times d_1$   
For thread depths up to max.  $3 \times d_1$



**H**

Materials of high tensile strength

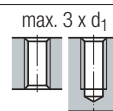
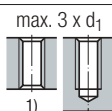


Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 312

**P** 3.1-5.1  
**K** 2.1

**P** 3.1-5.1  
**K** 2.1

| $\emptyset d_1$<br>mm | P<br>mm | $l_1$ | $l_2$ | $\emptyset d_2$ | $\square$ |       | InnoForm<br>2-H-SN-IKZ-LF3<br>PM-TIN-T26 | InnoForm<br>2-H-SN-IKZN-LF3<br>PM-TIN-T26 |
|-----------------------|---------|-------|-------|-----------------|-----------|-------|------------------------------------------|-------------------------------------------|
| <b>M</b> 24           | 3       | 215   | 30    | 18              | 14,5      | 22,6  | C599W700.0124                            | C500W700.0124                             |
| 30                    | 3,5     | 240   | 35    | 22              | 18        | 28,35 | C599W700.0130                            | C500W700.0130                             |
| 33                    | 3,5     | 255   | 35    | 25              | 20        | 31,35 | C599W700.0133                            | C500W700.0133                             |
| 36                    | 4       | 275   | 40    | 28              | 22        | 34,1  | C599W700.0136                            | C500W700.0136                             |
| 42                    | 4,5     | 295   | 45    | 32              | 24        | 39,85 | C599W700.0142                            | C500W700.0142                             |

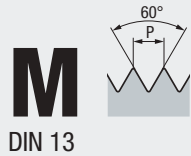
1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication



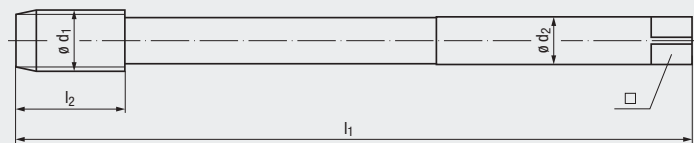
Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei  $P \geq 1$  mm um 0,05 mm kleiner vorzubohren.  
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for  $P \geq 1$  mm.  
For further information regarding the recommended preparatory diameters, see page 317.





Für Gewindetiefen bis max.  $4 \times d_1$   
For thread depths up to max.  $4 \times d_1$



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 312

| $\emptyset d_1$<br>mm | P<br>mm | $l_1$ | $l_2$ | $\emptyset d_2$ | $\square$ |       | InnoForm<br>2-H-SN- <b>IKZ-LF4</b><br>PM-TIN-T26 | InnoForm<br>2-H-SN- <b>IKZN-LF4</b><br>PM-TIN-T26 |
|-----------------------|---------|-------|-------|-----------------|-----------|-------|--------------------------------------------------|---------------------------------------------------|
| <b>M</b> 24           | 3       | 240   | 30    | 18              | 14,5      | 22,6  | C594W700.0124                                    | C595W700.0124                                     |
| 30                    | 3,5     | 270   | 35    | 22              | 18        | 28,35 | C594W700.0130                                    | C595W700.0130                                     |
| 33                    | 3,5     | 290   | 35    | 25              | 20        | 31,35 | C594W700.0133                                    | C595W700.0133                                     |
| 36                    | 4       | 310   | 40    | 28              | 22        | 34,1  | C594W700.0136                                    | C595W700.0136                                     |
| 42                    | 4,5     | 340   | 45    | 32              | 24        | 39,85 | C594W700.0142                                    | C595W700.0142                                     |

<sup>1)</sup> Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication



Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei  $P \geq 1$  mm um 0,05 mm kleiner vorzubohren.

Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for  $P \geq 1$  mm.

For further information regarding the recommended preparatory diameters, see page 317.

Product Finder

V<sub>c</sub>

M

MF

UNC

UNF

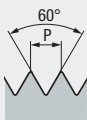
G

SELF-LOCK



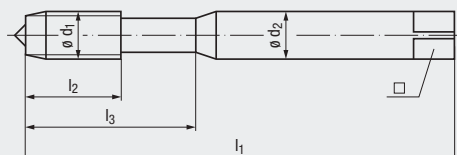
# MF

DIN 13



DIN  
2174

STEEL  
Steel  
materials



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



6HX  
TIN  
HSSE

C / 2-3  
E / O / P

6HX  
TIN  
HSSE

C / 2-3  
E / O / P

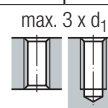
6HX  
TIN-66  
HSSE-PM

C / 2-3  
E / O / P

6HX  
TIN-66  
HSSE-PM

C / 2-3  
E / O

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 312

P 1.1-3.1  
N 1.5-1.6, 2.2

P 1.1-3.1  
N 1.5-1.6, 2.2

P 2.1-5.1

P 2.1-4.1

|          | Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |      | Drück<br>1-STEEL<br>TIN | Drück<br>1-STEEL-SN<br>TIN | InnoForm<br>1-STEEL-M-SN<br>PM-TIN-66 | InnoForm<br>1-STEEL-M-SN<br>IKZN-PM-TIN-66 |
|----------|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|-------------------------|----------------------------|---------------------------------------|--------------------------------------------|
| <b>M</b> | 2,5 x                  | 0,35    | 50             | 7              | 12             | 2,8              | 2,1 | 2,37 |                         |                            |                                       |                                            |
|          | 2,6 x                  | 0,35    | 50             | 7              | 12             | 2,8              | 2,1 | 2,47 |                         |                            |                                       |                                            |
|          | 3 x                    | 0,35    | 56             | 8              | 18             | 3,5              | 2,7 | 2,88 |                         |                            |                                       |                                            |
|          | 3,5 x                  | 0,35    | 56             | 9              | 20             | 4                | 3   | 3,38 |                         |                            |                                       |                                            |
|          | 4 x                    | 0,5     | 63             | 10             | 21             | 4,5              | 3,4 | 3,8  | B0911400.0210           | B0921400.0210              |                                       |                                            |
|          | 5 x                    | 0,5     | 70             | 11             | 25             | 6                | 4,9 | 4,8  | B0911400.0218           | B0921400.0218              |                                       |                                            |
|          | 6 x                    | 0,5     | 80             | 13             | 30             | 6                | 4,9 | 5,8  | B0911400.0228           | B0921400.0228              |                                       |                                            |
|          | 6 x                    | 0,75    | 80             | 13             | 30             | 6                | 4,9 | 5,7  | B0911400.0229           | B0921400.0229              |                                       |                                            |
|          | 7 x                    | 0,75    | 80             | 13             | 30             | 7                | 5,5 | 6,7  |                         |                            |                                       |                                            |
|          | 8 x                    | 0,75    | 80             | 14             | 30             | 8                | 6,2 | 7,7  | B0911400.0250           | B0921400.0250              |                                       |                                            |
|          | 8 x                    | 1       | 90             | 17             | 35             | 8                | 6,2 | 7,6  | B0911400.0251           | B0921400.0251              | B5217F00.0251                         | B5267F00.0251                              |
|          | 9 x                    | 0,75    | 90             | 14             | 35             | 9                | 7   | 8,7  |                         |                            |                                       |                                            |
|          | 9 x                    | 1       | 90             | 17             | 35             | 9                | 7   | 8,6  |                         |                            |                                       |                                            |
|          | 10 x                   | 0,75    | 90             | 15             | 35             | 10               | 8   | 9,7  |                         |                            |                                       |                                            |
|          | 10 x                   | 1       | 90             | 18             | 35             | 10               | 8   | 9,6  | B0911400.0276           | B0921400.0276              | B5217F00.0276                         | B5267F00.0276                              |
|          | 10 x                   | 1,25    | 100            | 18             | 39             | 10               | 8   | 9,45 |                         |                            |                                       | B5267F00.0277                              |
| DIN 2174 |                        |         |                |                |                |                  |     |      | 336                     | 336                        | 336                                   | 337                                        |

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication

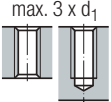
2) Zum Patent angemeldet  
Patent pending



Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P ≥ 1 mm um 0,05 mm kleiner vorzubohren.  
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P ≥ 1 mm.

For further information regarding the recommended preparatory diameters, see page 317.

| STEEL<br>Steel materials                                                                |                                                                                    | SPEED<br>High-speed cutting                                                             |                                                                                         | Z<br>CNC-controlled machines                                                            |                                                                                           | Product Finder |  |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------|--|
|        |                                                                                    |        |                                                                                         |        |                                                                                           | V <sub>c</sub> |  |
|         |                                                                                    |        |                                                                                         |       |                                                                                           | M              |  |
| $l_2 \approx 10 \times P$<br>2)                                                         |                                                                                    | $l_2 \approx 10 \times P$                                                               |                                                                                         | $l_2 \approx 10 \times P$                                                               |                                                                                           | MF             |  |
| 6HX                                                                                     |                                                                                    | 6HX                                                                                     | 6HX                                                                                     | 6HX                                                                                     | 6HX                                                                                       | UNC            |  |
| TIN-66                                                                                  |                                                                                    | TICN                                                                                    | TICN                                                                                    | TIN-80                                                                                  | TIN-80                                                                                    | UNF            |  |
| HSSE-PM                                                                                 |                                                                                    | HSSE                                                                                    | VHM                                                                                     | HSSE-PM                                                                                 | HSSE-PM                                                                                   | G              |  |
| E / 1,5-2                                                                               |                                                                                    | E / 1,5-2                                                                               | E / 1,5-2                                                                               | C / 2-3                                                                                 | C / 2-3                                                                                   | SELF-LOCK      |  |
| E / 0                                                                                   |                                                                                    | E / 0                                                                                   | E / 0                                                                                   | E / 0 / P                                                                               | E / 0                                                                                     |                |  |
| max. 3 x d <sub>1</sub>                                                                 |  | max. 3 x d <sub>1</sub>                                                                 |                                                                                         | max. 3 x d <sub>1</sub>                                                                 | max. 3 x d <sub>1</sub>                                                                   |                |  |
| P 2.1-4.1                                                                               |                                                                                    | N 1.4-1.6                                                                               | N 1.4-1.6                                                                               | P 1.1-4.1<br>K 2.1<br>N 2.2, 2.4-2.5                                                    | P 1.1-4.1<br>K 2.1<br>N 2.2, 2.4-2.5                                                      |                |  |
| InnoForm<br>1-STEEL-M/E-SN<br>IKZN-PM-TIN-66                                            |                                                                                    | Drück<br>1-GAL-SPEED/E<br>SN-IKZN-TICN                                                  | VHM-Drück<br>1-GAL-SPEED/E<br>SN-IKZN-TICN                                              | InnoForm<br>1-Z-SN<br>PM-TIN-80                                                         | InnoForm<br>1-Z-SN-1KZ<br>PM-TIN-80                                                       |                |  |
|                                                                                         |                                                                                    |                                                                                         |                                                                                         |                                                                                         |                                                                                           | M 2,5 x 0,35   |  |
|                                                                                         |                                                                                    |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 2,6 x 0,35     |  |
|                                                                                         |                                                                                    |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 3 x 0,35       |  |
|                                                                                         |                                                                                    |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 3,5 x 0,35     |  |
|                                                                                         |                                                                                    |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 4 x 0,5        |  |
|                                                                                         |                                                                                    |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 5 x 0,5        |  |
|                                                                                         |                                                                                    |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 6 x 0,5        |  |
|                                                                                         |                                                                                    | B5059500.0229                                                                           | B505Q800.0229                                                                           |                                                                                         |                                                                                           | 6 x 0,75       |  |
|                                                                                         |                                                                                    |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 7 x 0,75       |  |
|                                                                                         |                                                                                    |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 8 x 0,75       |  |
| B5337F00.0251                                                                           |                                                                                    | B5059500.0251                                                                           | B505Q800.0251                                                                           | B521Z700.0251                                                                           | B523Z700.0251                                                                             | 8 x 1          |  |
|                                                                                         |                                                                                    |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 9 x 0,75       |  |
|                                                                                         |                                                                                    |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 9 x 1          |  |
|                                                                                         |                                                                                    |                                                                                         |                                                                                         |                                                                                         |                                                                                           | 10 x 0,75      |  |
| B5337F00.0276                                                                           |                                                                                    |                                                                                         |                                                                                         | B521Z700.0276                                                                           | B523Z700.0276                                                                             | 10 x 1         |  |
|                                                                                         |                                                                                    | B5059500.0277                                                                           | B505Q800.0277                                                                           |                                                                                         |                                                                                           | 10 x 1,25      |  |
|  337 |                                                                                    |  337 |  337 |  339 |  339 |                |  |



M 2,5 x 0,35  
2,6 x 0,35  
3 x 0,35  
3,5 x 0,35  
4 x 0,5  
5 x 0,5  
6 x 0,5  
6 x 0,75  
7 x 0,75  
8 x 0,75  
8 x 1  
9 x 0,75  
9 x 1  
10 x 0,75  
10 x 1  
10 x 1,25



Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei  $P \geq 1$  mm um 0,05 mm kleiner vorzubohren.

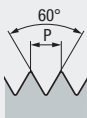
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for  $P \geq 1$  mm.

For further information regarding the recommended preparatory diameters, see page 317.

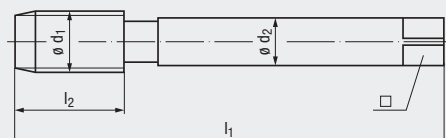
# MF

DIN 13



DIN  
2174

STEEL  
Steel  
materials

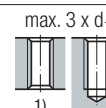
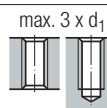


Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 312

P 1.1-3.1  
N 1.5-1.6, 2.2

P 1.1-3.1  
N 1.5-1.6, 2.2

P 2.1-5.1

P 2.1-5.1

|   | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |       | Drück<br>2-STEEL<br>TIN | Drück<br>2-STEEL-SN<br>TIN | InnoForm<br>2-STEEL-M-SN<br>PM-TIN-66 | InnoForm<br>2-STEEL-M-SN<br>IKZ-PM-TIN-66 |
|---|------------------------|---------|----------------|----------------|------------------|------|-------|-------------------------|----------------------------|---------------------------------------|-------------------------------------------|
| M | 11 x 1                 | 1       | 90             | 18             | 8                | 6,2  | 10,6  |                         |                            |                                       |                                           |
|   | 12 x 1                 | 1       | 100            | 18             | 9                | 7    | 11,6  | C0911400.0301           | C0921400.0301              |                                       |                                           |
|   | 12 x 1,25              | 1,25    | 100            | 22             | 9                | 7    | 11,45 |                         |                            |                                       |                                           |
|   | 12 x 1,5               | 1,5     | 100            | 22             | 9                | 7    | 11,35 | C0911400.0303           | C0921400.0303              | C5217F00.0303                         | C5237F00.0303                             |
|   | 14 x 1                 | 1       | 100            | 18             | 11               | 9    | 13,6  |                         |                            |                                       |                                           |
|   | 14 x 1,25              | 1,25    | 100            | 22             | 11               | 9    | 13,45 |                         |                            |                                       |                                           |
|   | 14 x 1,5               | 1,5     | 100            | 22             | 11               | 9    | 13,35 | C0911400.0331           | C0921400.0331              | C5217F00.0331                         | C5237F00.0331                             |
|   | 15 x 1                 | 1       | 100            | 18             | 12               | 9    | 14,6  |                         |                            |                                       |                                           |
|   | 15 x 1,5               | 1,5     | 100            | 22             | 12               | 9    | 14,35 |                         |                            |                                       |                                           |
|   | 16 x 1                 | 1       | 100            | 18             | 12               | 9    | 15,6  | C0911400.0357           | C0921400.0357              |                                       |                                           |
|   | 16 x 1,5               | 1,5     | 100            | 22             | 12               | 9    | 15,35 | C0911400.0359           | C0921400.0359              | C5217F00.0359                         | C5237F00.0359                             |
|   | 18 x 1                 | 1       | 110            | 20             | 14               | 11   | 17,6  |                         |                            |                                       |                                           |
|   | 18 x 1,5               | 1,5     | 110            | 25             | 14               | 11   | 17,35 |                         |                            |                                       |                                           |
|   | 18 x 2                 | 2       | 125            | 26             | 14               | 11   | 17,1  |                         |                            |                                       |                                           |
|   | 20 x 1                 | 1       | 125            | 20             | 16               | 12   | 19,6  |                         |                            |                                       |                                           |
|   | 20 x 1,5               | 1,5     | 125            | 25             | 16               | 12   | 19,35 | C0911400.0422           | C0921400.0422              |                                       |                                           |
|   | 20 x 2                 | 2       | 140            | 27             | 16               | 12   | 19,1  |                         |                            |                                       |                                           |
|   | 22 x 1,5               | 1,5     | 125            | 25             | 18               | 14,5 | 21,35 |                         |                            |                                       |                                           |
|   | 22 x 2                 | 2       | 140            | 27             | 18               | 14,5 | 21,1  |                         |                            |                                       |                                           |
|   | 24 x 1,5               | 1,5     | 140            | 27             | 18               | 14,5 | 23,35 |                         |                            |                                       |                                           |
|   | 24 x 2                 | 2       | 140            | 27             | 18               | 14,5 | 23,1  |                         |                            |                                       |                                           |
|   | 27 x 2                 | 2       | 140            | 28             | 20               | 16   | 26,1  |                         |                            |                                       |                                           |
|   | 30 x 2                 | 2       | 150            | 28             | 22               | 18   | 29,1  |                         |                            |                                       |                                           |
|   | 33 x 1,5               | 1,5     | 160            | 30             | 25               | 20   | 32,35 |                         |                            |                                       |                                           |
|   | 33 x 2                 | 2       | 160            | 30             | 25               | 20   | 32,1  |                         |                            |                                       |                                           |
|   | 36 x 1,5               | 1,5     | 170            | 30             | 28               | 22   | 35,35 |                         |                            |                                       |                                           |
|   | 36 x 3                 | 3       | 200            | 42             | 28               | 22   | 34,6  |                         |                            |                                       |                                           |

DIN 2174



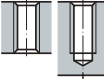
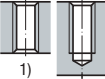
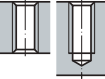
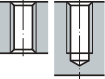
» 334

» 334

» 334

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication

2) Zum Patent angemeldet  
Patent pending

| STEEL<br>Steel materials                                                                                      |                                                                                                                     |                                                                                                               | SPEED<br>High-speed cutting                                                                                   |                                                                                         |  |  |  | Product Finder                |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|--|--|--|-------------------------------|
|                              |                                    |                              |                              |        |  |  |  | <a href="#">v<sub>c</sub></a> |
|                               |                                    |                              |                              |       |  |  |  | <a href="#">M</a>             |
| $l_2 \approx 10 \times P$<br>2)                                                                               | $l_2 \approx 10 \times P$<br>2)                                                                                     | $l_2 \approx 10 \times P$<br>2)                                                                               |                                                                                                               | $l_2 \approx 10 \times P$                                                               |  |  |  | <a href="#">MF</a>            |
| 6HX<br>TIN-66<br>HSSE-PM                                                                                      | 6HX<br>TIN-66<br>HSSE-PM                                                                                            | 6HX<br>TIN-66<br>HSSE-PM                                                                                      | 6HX<br>TICN<br>HSSE                                                                                           | 6HX<br>TICN<br>KHM                                                                      |  |  |  | <a href="#">UNC</a>           |
| C / 2-3<br>E / 0                                                                                              | E / 1,5-2<br>E / 0                                                                                                  | E / 1,5-2<br>E / 0                                                                                            | E / 1,5-2<br>E / 0                                                                                            | E / 1,5-2<br>E / 0                                                                      |  |  |  | <a href="#">UNF</a>           |
| max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br><br>1) | max. 3 x d <sub>1</sub><br> | max. 3 x d <sub>1</sub><br> |                                                                                         |  |  |  | <a href="#">G</a>             |
| P 2.1-5.1                                                                                                     | P 2.1-5.1                                                                                                           | P 2.1-5.1                                                                                                     | N 1.4-1.6                                                                                                     | N 1.4-1.6                                                                               |  |  |  | <a href="#">SELF-LOCK</a>     |
| InnoForm<br>2-STEEL-M-SN<br>IKZN-PM-TIN-66                                                                    | InnoForm<br>2-STEEL-M/E-SN<br>IKZ-PM-TIN-66                                                                         | InnoForm<br>2-STEEL-M/E-SN<br>IKZN-PM-TIN-66                                                                  | Drück<br>2-GAL-SPEED/E<br>SN-IKZN-TICN                                                                        | KHM-Drück<br>2-GAL-SPEED/E<br>SN-IKZN-TICN                                              |  |  |  |                               |
| C5267F00.0301                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | M 11 x 1                      |
| C5267F00.0302                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 12 x 1                        |
| C5267F00.0303                                                                                                 | C5317F00.0303                                                                                                       | C5337F00.0303                                                                                                 | C5059500.0302                                                                                                 | C505Q800.0302                                                                           |  |  |  | 12 x 1,25                     |
| C5267F00.0329                                                                                                 |                                                                                                                     |                                                                                                               | C5059500.0303                                                                                                 | C505Q800.0303                                                                           |  |  |  | 12 x 1,5                      |
| C5267F00.0330                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 14 x 1                        |
| C5267F00.0331                                                                                                 | C5317F00.0331                                                                                                       | C5337F00.0331                                                                                                 |                                                                                                               |                                                                                         |  |  |  | 14 x 1,25                     |
|                                                                                                               |                                                                                                                     |                                                                                                               | C5059500.0331                                                                                                 | C505Q800.0331                                                                           |  |  |  | 14 x 1,5                      |
|                                                                                                               |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 15 x 1                        |
|                                                                                                               |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 15 x 1,5                      |
|                                                                                                               |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 16 x 1                        |
| C5267F00.0359                                                                                                 | C5317F00.0359                                                                                                       | C5337F00.0359                                                                                                 | C5059500.0359                                                                                                 | C505Q800.0359                                                                           |  |  |  | 16 x 1,5                      |
|                                                                                                               |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 18 x 1                        |
| C5267F00.0390                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 18 x 1,5                      |
|                                                                                                               |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 18 x 2                        |
|                                                                                                               |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 20 x 1                        |
|                                                                                                               |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 20 x 1,5                      |
| C5267F00.0422                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 20 x 2                        |
| C5267F00.0423                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 22 x 1,5                      |
| C5267F00.0438                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 22 x 2                        |
| C5267F00.0439                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 24 x 1,5                      |
| C5267F00.0452                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 24 x 2                        |
| C5267F00.0453                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 27 x 2                        |
| C5267F00.0471                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 30 x 2                        |
| C5267F00.0491                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 33 x 1,5                      |
| C5267F00.0511                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 33 x 2                        |
| C5267F00.0512                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 36 x 1,5                      |
| C5267F00.0532                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  | 36 x 3                        |
| C5267F00.0534                                                                                                 |                                                                                                                     |                                                                                                               |                                                                                                               |                                                                                         |  |  |  |                               |
|  334                       |                                                                                                                     |  335                       |  335                       |  335 |  |  |  |                               |



Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei  $P \geq 1$  mm um 0,05 mm kleiner vorzubohren.

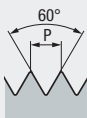
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for  $P \geq 1$  mm.

For further information regarding the recommended preparatory diameters, see page 317.

# MF

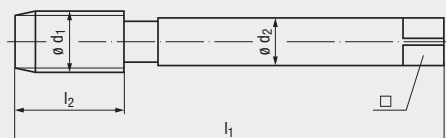
DIN 13



DIN  
2174

H

Materials of high  
tensile strength



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



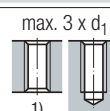
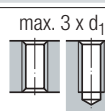
6HX  
TIN-T26  
HSSE-PM

6HX  
TIN-T26  
HSSE-PM

C / 2-3  
E / O / P

C / 2-3  
E

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 312

P 3.1-5.1  
K 2.1

P 3.1-5.1  
K 2.1

|  | ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □   |       | InnoForm<br>2-H-SN<br>PM-TIN-T26 | InnoForm<br>2-H-SN-IKZ<br>PM-TIN-T26 |
|--|------------------------|---------|----------------|----------------|------------------|-----|-------|----------------------------------|--------------------------------------|
|  | M 11                   | x 1     | 90             | 11             | 8                | 6,2 | 10,6  |                                  |                                      |
|  | 12                     | x 1     | 100            | 11             | 9                | 7   | 11,6  |                                  |                                      |
|  | 12                     | x 1,25  | 100            | 15             | 9                | 7   | 11,45 |                                  |                                      |
|  | 12                     | x 1,5   | 100            | 15             | 9                | 7   | 11,35 | C521W700.0303                    | C523W700.0303                        |
|  | 14                     | x 1     | 100            | 11             | 11               | 9   | 13,6  |                                  |                                      |
|  | 14                     | x 1,25  | 100            | 15             | 11               | 9   | 13,45 |                                  |                                      |
|  | 14                     | x 1,5   | 100            | 15             | 11               | 9   | 13,35 | C521W700.0331                    | C523W700.0331                        |
|  | 15                     | x 1     | 100            | 12             | 12               | 9   | 14,6  |                                  |                                      |
|  | 15                     | x 1,5   | 100            | 15             | 12               | 9   | 14,35 |                                  |                                      |
|  | 16                     | x 1     | 100            | 12             | 12               | 9   | 15,6  |                                  |                                      |
|  | 16                     | x 1,5   | 100            | 15             | 12               | 9   | 15,35 | C521W700.0359                    | C523W700.0359                        |
|  | 18                     | x 1     | 110            | 13             | 14               | 11  | 17,6  |                                  |                                      |
|  | 18                     | x 1,5   | 110            | 17             | 14               | 11  | 17,35 |                                  |                                      |
|  | 18                     | x 2     | 125            | 20             | 14               | 11  | 17,1  |                                  |                                      |
|  | 20                     | x 1     | 125            | 14             | 16               | 12  | 19,6  |                                  |                                      |
|  | 20                     | x 1,5   | 125            | 17             | 16               | 12  | 19,35 |                                  |                                      |
|  | 20                     | x 2     | 140            | 20             | 16               | 12  | 19,1  |                                  |                                      |

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication

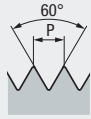
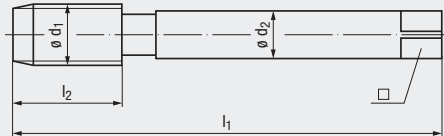


Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei  $P \geq 1$  mm um 0,05 mm kleiner vorzubohren.  
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for  $P \geq 1$  mm.  
For further information regarding the recommended preparatory diameters, see page 317.

**MF**

DIN 13

DIN  
2174Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

» 312

|          | $\varnothing d_1$<br>mm | P<br>mm | $l_1$ | $l_2$ | $\varnothing d_2$ | $\square$ |       | InnoForm<br>2-Z-SN<br>PM-TIN-80 | InnoForm<br>2-Z-SN-IKZ<br>PM-TIN-80 |  |  |
|----------|-------------------------|---------|-------|-------|-------------------|-----------|-------|---------------------------------|-------------------------------------|--|--|
| <b>M</b> | 11                      | x 1     | 90    | 11    | 8                 | 6,2       | 10,6  |                                 |                                     |  |  |
|          | 12                      | x 1     | 100   | 11    | 9                 | 7         | 11,6  |                                 |                                     |  |  |
|          | 12                      | x 1,25  | 100   | 15    | 9                 | 7         | 11,45 |                                 |                                     |  |  |
|          | 12                      | x 1,5   | 100   | 15    | 9                 | 7         | 11,35 | <b>C521Z700.0303</b>            | <b>C523Z700.0303</b>                |  |  |
|          | 14                      | x 1     | 100   | 11    | 11                | 9         | 13,6  |                                 |                                     |  |  |
|          | 14                      | x 1,25  | 100   | 15    | 11                | 9         | 13,45 |                                 |                                     |  |  |
|          | 14                      | x 1,5   | 100   | 15    | 11                | 9         | 13,35 | <b>C521Z700.0331</b>            | <b>C523Z700.0331</b>                |  |  |
|          | 15                      | x 1     | 100   | 12    | 12                | 9         | 14,6  |                                 |                                     |  |  |
|          | 15                      | x 1,5   | 100   | 15    | 12                | 9         | 14,35 |                                 |                                     |  |  |
|          | 16                      | x 1     | 100   | 12    | 12                | 9         | 15,6  |                                 |                                     |  |  |
|          | 16                      | x 1,5   | 100   | 15    | 12                | 9         | 15,35 | <b>C521Z700.0359</b>            | <b>C523Z700.0359</b>                |  |  |
|          | 18                      | x 1     | 110   | 13    | 14                | 11        | 17,6  |                                 |                                     |  |  |
|          | 18                      | x 1,5   | 110   | 17    | 14                | 11        | 17,35 |                                 |                                     |  |  |
|          | 18                      | x 2     | 125   | 20    | 14                | 11        | 17,1  |                                 |                                     |  |  |
|          | 20                      | x 1     | 125   | 14    | 16                | 12        | 19,6  |                                 |                                     |  |  |
|          | 20                      | x 1,5   | 125   | 17    | 16                | 12        | 19,35 |                                 |                                     |  |  |
|          | 20                      | x 2     | 140   | 20    | 16                | 12        | 19,1  |                                 |                                     |  |  |
| DIN 2174 |                         |         |       |       |                   |           |       |                                 |                                     |  |  |

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication



Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei  $P \geq 1$  mm um 0,05 mm kleiner vorzubohren.

Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

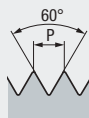
We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for  $P \geq 1$  mm.

For further information regarding the recommended preparatory diameters, see page 317.

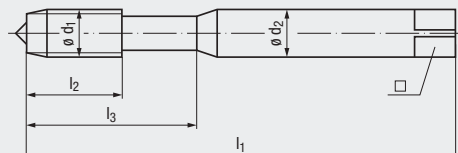


# UNC

ASME B1.1



≈ DIN  
2174



**STEEL**  
Steel  
materials



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



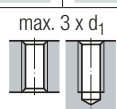
2BX  
TIN  
HSSE

2BX  
TIN  
HSSE

C / 2-3  
E / O / P

C / 2-3  
E / O / P

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 312

P 1.1-3.1  
N 1.5-1.6, 2.2

P 1.1-3.1  
N 1.5-1.6, 2.2

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |     |
|--------------------------|------------------|----------------|----------------|----------------|------------------|-----|-----|
| Nr. 4                    | 0.1120           | 40             | 56             | 11             | 18               | 3,5 | 2,7 |
| Nr. 5                    | 0.1250           | 40             | 56             | 11             | 18               | 3,5 | 2,7 |
| Nr. 6                    | 0.1380           | 32             | 56             | 12             | 20               | 4   | 3   |
| Nr. 8                    | 0.1640           | 32             | 63             | 13             | 21               | 4,5 | 3,4 |
| Nr. 10                   | 0.1900           | 24             | 70             | 15             | 25               | 6   | 4,9 |
| Nr. 12                   | 0.2160           | 24             | 80             | 16             | 30               | 6   | 4,9 |
| 1/4                      | 0.2500           | 20             | 80             | 17             | 30               | 7   | 5,5 |
| 5/16                     | 0.3125           | 18             | 90             | 20             | 35               | 8   | 6,2 |
| 3/8                      | 0.3750           | 16             | 100            | 22             | 39               | 10  | 8   |



Drück  
1-STEEL  
TIN

Drück  
1-STEEL-SN  
TIN

B0911400.5003  
B0911400.5005  
B0911400.5006  
B0911400.5007  
B0911400.5009  
B0911400.5010  
B0911400.5011

B0921400.5003  
B0921400.5005  
B0921400.5006  
B0921400.5007  
B0921400.5009  
B0921400.5010  
B0921400.5011

≈ DIN 2174



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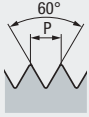
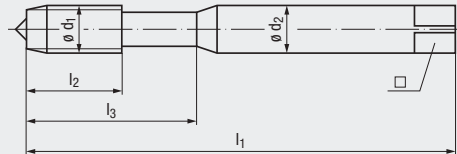
Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P = 24 Gg./1" und größer um 0,05 mm kleiner vorzubohren.  
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P = 24 threads/1" and coarser threads.  
For further information regarding the recommended preparatory diameters, see page 317.



**UNC**

ASME B1.1

≈ DIN  
2174Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

» 312

| Ø d <sub>1</sub><br>inch | inch   | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |      |
|--------------------------|--------|------------------|----------------|----------------|----------------|------------------|-----|------|
| Nr. 4                    | 0.1120 | 40               | 56             | 6              | 18             | 3,5              | 2,7 | 2,55 |
| Nr. 5                    | 0.1250 | 40               | 56             | 7              | 18             | 3,5              | 2,7 | 2,9  |
| Nr. 6                    | 0.1380 | 32               | 56             | 7              | 20             | 4                | 3   | 3,15 |
| Nr. 8                    | 0.1640 | 32               | 63             | 8              | 21             | 4,5              | 3,4 | 3,8  |
| Nr. 10                   | 0.1900 | 24               | 70             | 10             | 25             | 6                | 4,9 | 4,35 |
| Nr. 12                   | 0.2160 | 24               | 80             | 10             | 30             | 6                | 4,9 | 5    |
| 1/4                      | 0.2500 | 20               | 80             | 13             | 30             | 7                | 5,5 | 5,75 |
| 5/16                     | 0.3125 | 18               | 90             | 14             | 35             | 8                | 6,2 | 7,3  |
| 3/8                      | 0.3750 | 16               | 100            | 16             | 39             | 10               | 8   | 8,8  |

≈ DIN 2174

**Z**  
CNC-controlled  
machines

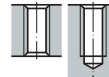
2BX

TIN-80

HSSE-PM

C / 2-3

E / O / P

max. 3 x d<sub>1</sub>

2BX

TIN-80

HSSE-PM

C / 2-3

E / O

max. 3 x d<sub>1</sub>

**P** 1.1-4.1  
**K** 2.1  
**N** 2.2, 2.4-2.5

**P** 1.1-4.1  
**K** 2.1  
**N** 2.2, 2.4-2.5

InnoForm  
1-Z-SN  
PM-TIN-80InnoForm  
1-Z-SN-1KZ  
PM-TIN-80

B521Z700.5003

B521Z700.5005

B521Z700.5006

B521Z700.5007

B523Z700.5007

B521Z700.5009

B521Z700.5010

B521Z700.5011

B523Z700.5009

B523Z700.5010

B523Z700.5011

343

343

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication



Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P = 24 Gg./1" und größer um 0,05 mm kleiner vorzubohren.

Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

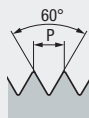
We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P = 24 threads/1" and coarser threads.

For further information regarding the recommended preparatory diameters, see page 317.

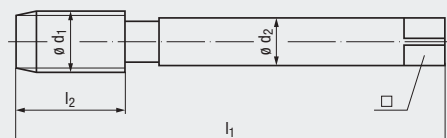


# UNC

ASME B1.1



≈ DIN 2174



**STEEL**  
Steel materials



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



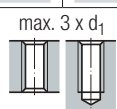
2BX  
TIN  
HSSE

2BX  
TIN  
HSSE

C / 2-3  
E / O / P

C / 2-3  
E / O / P

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 312

P 1.1-3.1  
N 1.5-1.6, 2.2

P 1.1-3.1  
N 1.5-1.6, 2.2

| ø d <sub>1</sub><br>inch | inch   | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |       |
|--------------------------|--------|------------------|----------------|----------------|------------------|------|-------|
| 7/16                     | 0.4375 | 14               | 100            | 22             | 8                | 6,2  | 10,25 |
| 1/2                      | 0.5000 | 13               | 110            | 25             | 9                | 7    | 11,8  |
| 9/16                     | 0.5625 | 12               | 110            | 26             | 11               | 9    | 13,3  |
| 5/8                      | 0.6250 | 11               | 110            | 27             | 12               | 9    | 14,8  |
| 3/4                      | 0.7500 | 10               | 125            | 30             | 14               | 11   | 17,85 |
| 7/8                      | 0.8750 | 9                | 140            | 32             | 18               | 14,5 | 20,9  |
| 1"                       | 1.0000 | 8                | 160            | 36             | 18               | 14,5 | 23,9  |

≈ DIN 2174



Drück  
2-STEEL  
TIN

Drück  
2-STEEL-SN  
TIN

C0911400.5012  
C0911400.5013  
C0911400.5014  
C0911400.5015  
C0911400.5016

C0921400.5012  
C0921400.5013  
C0921400.5014  
C0921400.5015  
C0921400.5016

340

340

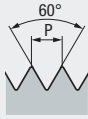
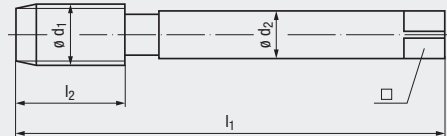


Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P = 24 Gg./1" und größer um 0,05 mm kleiner vorzubohren.  
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P = 24 threads/1" and coarser threads.  
For further information regarding the recommended preparatory diameters, see page 317.

**UNC**

ASME B1.1

≈ DIN  
2174Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

» 312

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □  |      |
|--------------------------|------------------|----------------|----------------|------------------|----|------|
| 7/16                     | 0.4375           | 14             | 100            | 18               | 8  | 6,2  |
| 1/2                      | 0.5000           | 13             | 110            | 20               | 9  | 7    |
| 9/16                     | 0.5625           | 12             | 110            | 20               | 11 | 9    |
| 5/8                      | 0.6250           | 11             | 110            | 22               | 12 | 9    |
| 3/4                      | 0.7500           | 10             | 125            | 25               | 14 | 11   |
| 7/8                      | 0.8750           | 9              | 140            | 27               | 18 | 14,5 |
| 1"                       | 1.0000           | 8              | 160            | 30               | 18 | 14,5 |

≈ DIN 2174

**Z**  
CNC-controlled  
machines

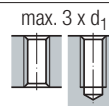
2BX

TIN-80

HSSE-PM

C / 2-3

E / O / P



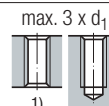
2BX

TIN-80

HSSE-PM

C / 2-3

E / O

**P** 1.1-4.1**K** 2.1**N** 2.2, 2.4-2.5**P** 1.1-4.1**K** 2.1**N** 2.2, 2.4-2.5**InnoForm**  
2-Z-SN  
PM-TIN-80**InnoForm**  
2-Z-SN-IKZ  
PM-TIN-80**C521Z700.5012**  
**C521Z700.5013****C523Z700.5012**  
**C523Z700.5013****C521Z700.5015**  
**C521Z700.5016****C523Z700.5015**  
**C523Z700.5016**

» 341

» 341

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication

Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P = 24 Gg./1" und größer um 0,05 mm kleiner vorzubohren.

Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

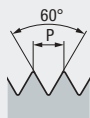
We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P = 24 threads/1" and coarser threads.

For further information regarding the recommended preparatory diameters, see page 317.

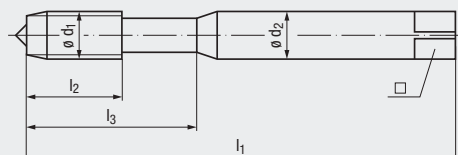


# UNF

ASME B1.1



≈ DIN  
2174



**STEEL**  
Steel  
materials



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



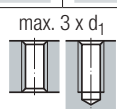
2BX  
TIN  
HSSE

2BX  
TIN  
HSSE

C / 2-3  
E / O / P

C / 2-3  
E / O / P

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 312

P 1.1-3.1  
N 1.5-1.6, 2.2

P 1.1-3.1  
N 1.5-1.6, 2.2

| ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | ø d <sub>2</sub> | □   |     |
|--------------------------|------------------|----------------|----------------|----------------|------------------|-----|-----|
| Nr. 2                    | 0.0860           | 64             | 45             | 7              | 12               | 2,8 | 2,1 |
| Nr. 3                    | 0.0990           | 56             | 50             | 9              | 14               | 2,8 | 2,1 |
| Nr. 4                    | 0.1120           | 48             | 56             | 11             | 18               | 3,5 | 2,7 |
| Nr. 5                    | 0.1250           | 44             | 56             | 11             | 18               | 3,5 | 2,7 |
| Nr. 6                    | 0.1380           | 40             | 56             | 12             | 20               | 4   | 3   |
| Nr. 8                    | 0.1640           | 36             | 63             | 13             | 21               | 4,5 | 3,4 |
| Nr. 10                   | 0.1900           | 32             | 70             | 15             | 25               | 6   | 4,9 |
| Nr. 12                   | 0.2160           | 28             | 80             | 16             | 30               | 6   | 4,9 |
| 1/4                      | 0.2500           | 28             | 80             | 17             | 30               | 7   | 5,5 |
| 5/16                     | 0.3125           | 24             | 90             | 17             | 35               | 8   | 6,2 |
| 3/8                      | 0.3750           | 24             | 90             | 18             | 35               | 10  | 8   |

≈ DIN 2174



Drück  
1-STEEL  
TIN

Drück  
1-STEEL-SN  
TIN

B0911400.5037  
B0911400.5039  
B0911400.5040  
B0911400.5041

B0921400.5037  
B0921400.5039  
B0921400.5040  
B0921400.5041

B0911400.5043  
B0911400.5044  
B0911400.5045

B0921400.5043  
B0921400.5044  
B0921400.5045

346

346

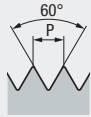
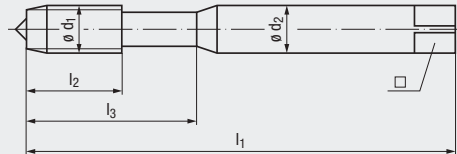


Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P = 24 Gg./1" und größer um 0,05 mm kleiner vorzubohren.  
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P = 24 threads/1" and coarser threads.  
For further information regarding the recommended preparatory diameters, see page 317.

# UNF

ASME B1.1


≈ DIN  
2174

Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material

Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 312

| Ø d <sub>1</sub> | inch   | P  | Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □    |  |
|------------------|--------|----|-------------|----------------|----------------|----------------|------------------|------|--|
| Nr. 2            | 0.0860 | 64 | 45          | 4,5            | 12             | 2,8            | 2,1              | 2,02 |  |
| Nr. 3            | 0.0990 | 56 | 50          | 5              | 14             | 2,8            | 2,1              | 2,32 |  |
| Nr. 4            | 0.1120 | 48 | 56          | 6              | 18             | 3,5            | 2,7              | 2,62 |  |
| Nr. 5            | 0.1250 | 44 | 56          | 7              | 18             | 3,5            | 2,7              | 2,92 |  |
| Nr. 6            | 0.1380 | 40 | 56          | 7              | 20             | 4              | 3                | 3,22 |  |
| Nr. 8            | 0.1640 | 36 | 63          | 8              | 21             | 4,5            | 3,4              | 3,85 |  |
| Nr. 10           | 0.1900 | 32 | 70          | 10             | 25             | 6              | 4,9              | 4,45 |  |
| Nr. 12           | 0.2160 | 28 | 80          | 10             | 30             | 6              | 4,9              | 5,1  |  |
| 1/4              | 0.2500 | 28 | 80          | 10             | 30             | 7              | 5,5              | 5,95 |  |
| 5/16             | 0.3125 | 24 | 90          | 10             | 35             | 8              | 6,2              | 7,45 |  |
| 3/8              | 0.3750 | 24 | 90          | 10             | 35             | 10             | 8                | 9,05 |  |

≈ DIN 2174


1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication

Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P = 24 Gg./1" und größer um 0,05 mm kleiner vorzubohren.  
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P = 24 threads/1" and coarser threads.  
For further information regarding the recommended preparatory diameters, see page 317.

| Z<br>CNC-controlled machines |                               |  |  |
|------------------------------|-------------------------------|--|--|
|                              |                               |  |  |
|                              |                               |  |  |
| 2BX                          | 2BX                           |  |  |
| TIN-80                       | TIN-80                        |  |  |
| HSSE-PM                      | HSSE-PM                       |  |  |
| C / 2-3                      | C / 2-3                       |  |  |
| E / O / P                    | E / O                         |  |  |
| max. 3 x d <sub>1</sub>      | max. 3 x d <sub>1</sub>       |  |  |
|                              |                               |  |  |
| P 1.1-4.1                    | P 1.1-4.1                     |  |  |
| K 2.1                        | K 2.1                         |  |  |
| N 2.2, 2.4-2.5               | N 2.2, 2.4-2.5                |  |  |
| InnoForm 1-Z-SN PM-TIN-80    | InnoForm 1-Z-SN-1KZ PM-TIN-80 |  |  |
| B521Z700.5039                |                               |  |  |
| B521Z700.5040                |                               |  |  |
| B521Z700.5041                | B523Z700.5041                 |  |  |
| B521Z700.5043                | B523Z700.5043                 |  |  |
| B521Z700.5044                | B523Z700.5044                 |  |  |
| B521Z700.5045                | B523Z700.5045                 |  |  |
| 347                          | 347                           |  |  |

Product Finder

V<sub>c</sub>

M

MF

UNC

UNF

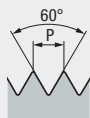
G

SELF-LOCK

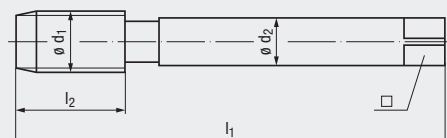


# UNF

ASME B1.1



≈ DIN  
2174



**STEEL**  
Steel  
materials



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



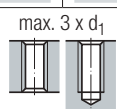
2BX  
TIN  
HSSE

2BX  
TIN  
HSSE

C / 2-3  
E / O / P

C / 2-3  
E / O / P

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 312

P 1.1-3.1  
N 1.5-1.6, 2.2

P 1.1-3.1  
N 1.5-1.6, 2.2

| ø d <sub>1</sub><br>inch | inch   | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □    |       |
|--------------------------|--------|------------------|----------------|----------------|------------------|------|-------|
| 7/16                     | 0.4375 | 20               | 100            | 22             | 8                | 6,2  | 10,55 |
| 1/2                      | 0.5000 | 20               | 100            | 22             | 9                | 7    | 12,15 |
| 9/16                     | 0.5625 | 18               | 100            | 22             | 11               | 9    | 13,65 |
| 5/8                      | 0.6250 | 18               | 100            | 22             | 12               | 9    | 15,25 |
| 3/4                      | 0.7500 | 16               | 110            | 25             | 14               | 11   | 18,35 |
| 7/8                      | 0.8750 | 14               | 125            | 25             | 18               | 14,5 | 21,4  |
| 1"                       | 1.0000 | 12               | 140            | 28             | 18               | 14,5 | 24,45 |

≈ DIN 2174



Drück  
2-STEEL  
TIN

Drück  
2-STEEL-SN  
TIN

C0911400.5046  
C0911400.5047  
C0911400.5048  
C0911400.5049  
C0911400.5050

C0921400.5046  
C0921400.5047  
C0921400.5048  
C0921400.5049  
C0921400.5050

344

344

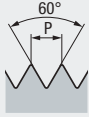
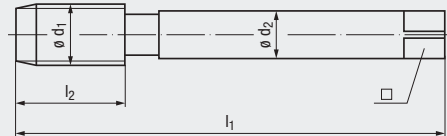


Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P = 24 Gg./1" und gröber um 0,05 mm kleiner vorzubohren.  
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P = 24 threads/1" and coarser threads.  
For further information regarding the recommended preparatory diameters, see page 317.

**UNF**

ASME B1.1

≈ DIN  
2174Technische Informationen  
Technical informationToleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting materialGewindetiefe und Lochform  
Thread depth and hole typeEinsatzgebiete – Material  
Applications – material

» 312

| ø d <sub>1</sub><br>inch                                                                       | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | ø d <sub>2</sub> | □  |  | InnoForm<br>2-Z-SN<br>PM-TIN-80                                                         | InnoForm<br>2-Z-SN-IKZ<br>PM-TIN-80                                                       |               |  |  |
|------------------------------------------------------------------------------------------------|------------------|----------------|----------------|------------------|----|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------|--|--|
| 7/16                                                                                           | 0.4375           | 20             | 100            | 13               | 8  | 6,2                                                                                 | 10,55                                                                                   | C521Z700.5046                                                                             | C523Z700.5046 |  |  |
| 1/2                                                                                            | 0.5000           | 20             | 100            | 13               | 9  | 7                                                                                   | 12,15                                                                                   | C521Z700.5047                                                                             | C523Z700.5047 |  |  |
| 9/16                                                                                           | 0.5625           | 18             | 100            | 15               | 11 | 9                                                                                   | 13,65                                                                                   |                                                                                           |               |  |  |
| 5/8                                                                                            | 0.6250           | 18             | 100            | 15               | 12 | 9                                                                                   | 15,25                                                                                   |                                                                                           |               |  |  |
| 3/4                                                                                            | 0.7500           | 16             | 110            | 17               | 14 | 11                                                                                  | 18,35                                                                                   |                                                                                           |               |  |  |
| 7/8                                                                                            | 0.8750           | 14             | 125            | 17               | 18 | 14,5                                                                                | 21,4                                                                                    |                                                                                           |               |  |  |
| 1"                                                                                             | 1.0000           | 12             | 140            | 20               | 18 | 14,5                                                                                | 24,45                                                                                   |                                                                                           |               |  |  |
| ≈ DIN 2174  |                  |                |                |                  |    |                                                                                     |  345 |  345 |               |  |  |

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication

**Z**  
CNC-controlled  
machines

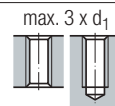
2BX

TIN-80

HSSE-PM

C / 2-3

E / O / P



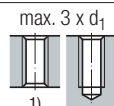
2BX

TIN-80

HSSE-PM

C / 2-3

E / O



P 1.1-4.1  
K 2.1  
N 2.2, 2.4-2.5

P 1.1-4.1  
K 2.1  
N 2.2, 2.4-2.5

InnoForm  
2-Z-SN  
PM-TIN-80InnoForm  
2-Z-SN-IKZ  
PM-TIN-80C521Z700.5046  
C521Z700.5047C523Z700.5046  
C523Z700.5047

345

345

Product  
FinderV<sub>c</sub>

M

MF

UNC

UNF

G

SELF-LOCK



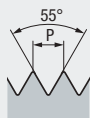
Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P = 24 Gg./1" und gröber um 0,05 mm kleiner vorzubohren.

Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P = 24 threads/1" and coarser threads.

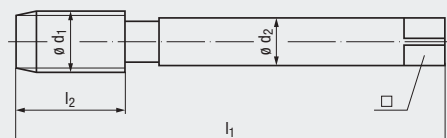
For further information regarding the recommended preparatory diameters, see page 317.

**G (BSP)**  
DIN EN ISO 228



DIN  
2189

**STEEL**  
Steel  
materials



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



„X“

TIN

HSSE

C / 2-3

E / O / P

„X“

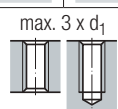
TIN

HSSE

C / 2-3

E / O / P

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

» 312

P 1.1-3.1  
N 1.5-1.6, 2.2

P 1.1-3.1  
N 1.5-1.6, 2.2

| Nenngröße<br>Nom. size | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □    |       |               | Drück<br>2-STEEL<br>TIN | Drück<br>2-STEEL-SN<br>TIN |
|------------------------|------------------------|------------------|----------------|----------------|------------------|------|-------|---------------|-------------------------|----------------------------|
| <b>G</b> 1/16          | 7,72                   | 28               | 90             | 17             | 6                | 4,9  | 7,25  |               |                         |                            |
| 1/8                    | 9,73                   | 28               | 90             | 18             | 7                | 5,5  | 9,25  | C0911400.4035 | C0921400.4035           |                            |
| 1/4                    | 13,16                  | 19               | 100            | 22             | 11               | 9    | 12,55 | C0911400.4036 | C0921400.4036           |                            |
| 3/8                    | 16,66                  | 19               | 100            | 22             | 12               | 9    | 16,05 | C0911400.4037 | C0921400.4037           |                            |
| 1/2                    | 20,96                  | 14               | 125            | 25             | 16               | 12   | 20,1  | C0911400.4038 | C0921400.4038           |                            |
| 5/8                    | 22,91                  | 14               | 125            | 25             | 18               | 14,5 | 22,05 |               |                         |                            |
| 3/4                    | 26,44                  | 14               | 140            | 28             | 20               | 16   | 25,6  |               | C0921400.4040           |                            |
| 7/8                    | 30,20                  | 14               | 150            | 28             | 22               | 18   | 29,35 |               |                         |                            |
| 1"                     | 33,25                  | 11               | 160            | 30             | 25               | 20   | 32,15 |               | C0921400.4042           |                            |



Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P = 24 Gg./1" und gröber um 0,05 mm kleiner vorzubohren.

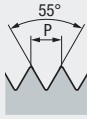
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P = 24 threads/1" and coarser threads.

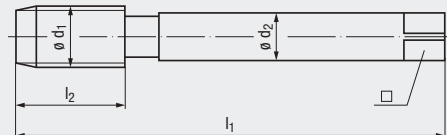
For further information regarding the recommended preparatory diameters, see page 317.



**G (BSP)**  
DIN EN ISO 228



DIN  
2189



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



Gewindetiefe und Lochform  
Thread depth and hole type

Einsatzgebiete – Material  
Applications – material

» 312

| Nenngröße<br>Nom. size | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | l <sub>1</sub> | l <sub>2</sub> | Ø d <sub>2</sub> | □  |      |
|------------------------|------------------------|------------------|----------------|----------------|------------------|----|------|
| <b>G</b>               | 1/16                   | 7,72             | 28             | 90             | 10               | 6  | 4,9  |
|                        | 1/8                    | 9,73             | 28             | 90             | 10               | 7  | 5,5  |
|                        | 1/4                    | 13,16            | 19             | 100            | 15               | 11 | 9    |
|                        | 3/8                    | 16,66            | 19             | 100            | 15               | 12 | 9    |
|                        | 1/2                    | 20,96            | 14             | 125            | 17               | 16 | 12   |
|                        | 5/8                    | 22,91            | 14             | 125            | 17               | 18 | 14,5 |
|                        | 3/4                    | 26,44            | 14             | 140            | 20               | 20 | 16   |
|                        | 7/8                    | 30,20            | 14             | 150            | 22               | 22 | 18   |
|                        | 1"                     | 33,25            | 11             | 160            | 24               | 25 | 20   |

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich  
Cold-forming in through holes is possible only with external cooling/lubrication

**Z**  
CNC-controlled  
machines



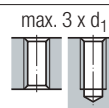
„X“

TIN-80

HSSE-PM

C / 2-3

E / O / P



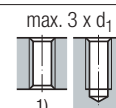
„X“

TIN-80

HSSE-PM

C / 2-3

E / O



**P** 1.1-4.1  
**K** 2.1  
**N** 2.2, 2.4-2.5

**P** 1.1-4.1  
**K** 2.1  
**N** 2.2, 2.4-2.5

InnoForm  
2-Z-SN  
PM-TIN-80

InnoForm  
2-Z-SN-1KZ  
PM-TIN-80

**C521Z700.4035**  
**C521Z700.4036**  
**C521Z700.4037**  
**C521Z700.4038**

**C523Z700.4035**  
**C523Z700.4036**  
**C523Z700.4037**  
**C523Z700.4038**

Product  
Finder

V<sub>c</sub>

M

MF

UNC

UNF

G

SELF-LOCK



Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P = 24 Gg./1" und gröber um 0,05 mm kleiner vorzubohren.

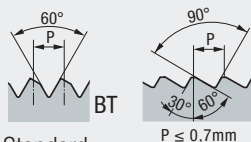
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P = 24 threads/1" and coarser threads.

For further information regarding the recommended preparatory diameters, see page 317.

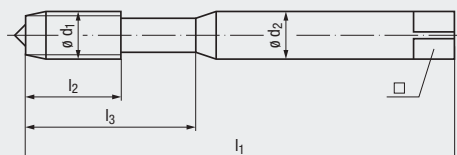
# LK-M

EMUGE-Norm · EMUGE Standard



DIN  
2174

STEEL  
Steel  
materials



Technische Informationen  
Technical information

Toleranz · Tolerance  
Beschichtung · Coating  
Schneidstoff · Cutting material



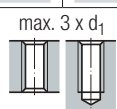
TIN  
HSSE

TIN  
HSSE

C / 2-3  
E / O / P

C / 2-3  
E / O / P

Gewindetiefe und Lochform  
Thread depth and hole type



Einsatzgebiete – Material  
Applications – material

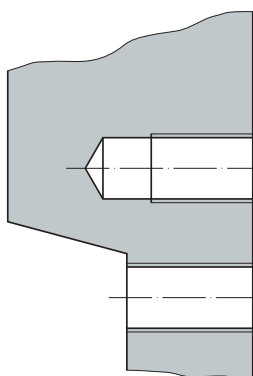
» 312

P 1.1-3.1  
N 1.5-1.6, 2.2

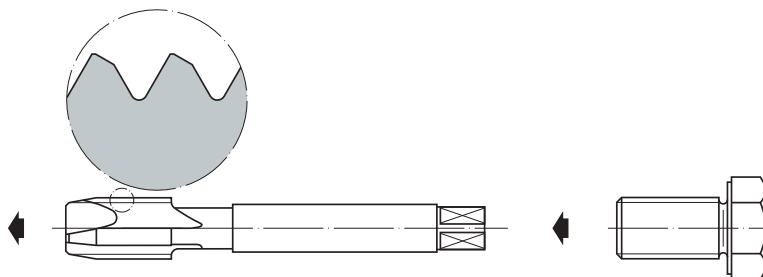
P 1.1-3.1  
N 1.5-1.6, 2.2

|      | Ø d <sub>1</sub><br>mm | P<br>mm | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | Ø d <sub>2</sub> | □   |      | Drück<br>1-STEEL<br>TIN | Drück<br>1-STEEL-SN<br>TIN |
|------|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|-------------------------|----------------------------|
| LK-M | 3                      | 0,5     | 56             | 11             | 18             | 3,5              | 2,7 | 2,85 | B0911400.1046           | B0921400.1046              |
|      | 4                      | 0,7     | 63             | 13             | 21             | 4,5              | 3,4 | 3,8  | B0911400.1048           | B0921400.1048              |
|      | 5                      | 0,8     | 70             | 15             | 25             | 6                | 4,9 | 4,8  | B0911400.1050           | B0921400.1050              |
|      | 6                      | 1       | 80             | 17             | 30             | 6                | 4,9 | 5,7  | B0911400.1052           | B0921400.1052              |
|      | 8                      | 1,25    | 90             | 20             | 35             | 8                | 6,2 | 7,6  | B0911400.1054           | B0921400.1054              |
|      | 10                     | 1,5     | 100            | 22             | 39             | 10               | 8   | 9,5  | B0911400.1056           | B0921400.1056              |

Ausführung BT  
Type BT



BT = Keilfläche nach hinten geneigt  
BT = Wedge ramp inclined backwards



Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei  $P \geq 1$  mm um 0,05 mm kleiner vorzubohren.  
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 317.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for  $P \geq 1$  mm.  
For further information regarding the recommended preparatory diameters, see page 317.



## Gewindefräser Thread Milling Cutters



Seite · Page

|                                      |                                             |           |
|--------------------------------------|---------------------------------------------|-----------|
| Übersichten                          | Contents                                    | 352 - 357 |
| Einsatzempfehlungen und Schnittwerte | Application recommendation and cutting data | 358 - 368 |
| Produktseiten                        | Product pages                               | 369 - 512 |

Product  
Finder

$V_c / f_z$

M

MF

UNC  
UN, UNS

UNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



### BGF-Z2

#### Bohrgewindefräser

- Zur Herstellung von Kernloch, Senkfase und Innengewinde in einem Arbeitsgang
- Kein vorgearbeitetes Kernloch notwendig
- Abmessungsgebunden

#### Drill thread mills

- For the production of thread hole, chamfer and internal thread in one work process
- A premachined thread hole is not necessary
- For one thread size only



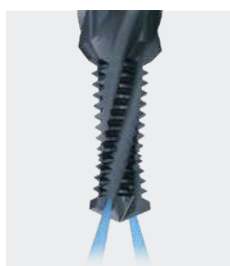
### BGF-Z3

#### Bohrgewindefräser

- Zur Herstellung von Kernloch, Senkfase und Innengewinde in einem Arbeitsgang
- Kein vorgearbeitetes Kernloch notwendig
- Abmessungsgebunden
- Speziell für vorgegossene Kernlöcher

#### Drill thread mills

- For the production of thread hole, chamfer and internal thread in one work process
- A premachined thread hole is not necessary
- For one thread size only
- Especially for pre-cast thread holes



### BGF-Z4

#### Bohrgewindefräser

- Zur Herstellung von Kernloch, Senkfase und Innengewinde in einem Arbeitsgang
- Kein vorgearbeitetes Kernloch notwendig
- Abmessungsgebunden
- Kurze Bearbeitungszeit durch 4 Nuten

#### Drill thread mills

- For the production of thread hole, chamfer and internal thread in one work process
- A premachined thread hole is not necessary
- For one thread size only
- Short machining time due to 4 flutes



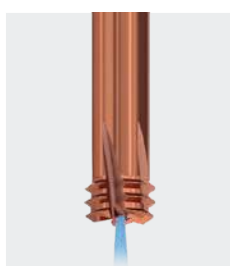
### ZBGF

#### Zirkular-Bohrgewindefräser

- Zur Herstellung von Kernloch und Innengewinde in einem Arbeitsgang
- Anfasen des Kernlochs mit Stirnfase möglich
- Kein vorgearbeitetes Kernloch notwendig
- Abmessungsgebunden

#### Circular drill thread mills

- For the production of thread hole, chamfer and internal thread in one work process
- Chamfering the thread hole with face chamfer possible
- A premachined thread hole is not necessary
- For one thread size only



### ZBGF-S-CUT

#### Zirkular-Bohrgewindefräser

- Zur Herstellung von Kernloch und Innengewinde in einem Arbeitsgang
- Anfasen des Kernlochs mit Stirnfase möglich
- Kein vorgearbeitetes Kernloch notwendig
- Abmessungsgebunden
- Für nichtrostende Stahlwerkstoffe und Spezialwerkstoffe wie Inconel oder Titan

#### Circular drill thread mills

- For the production of thread hole and internal thread in one work process
- Chamfering the thread hole with face chamfer possible
- A premachined thread hole is not necessary
- For one thread size only
- For stainless steel materials and special materials such as Inconel or titanium



### ZBGF-HCUT

#### Zirkular-Bohrgewindefräser

- Zur Herstellung von Kernloch und Innengewinde in einem Arbeitsgang
- Anfasen des Kernlochs mit Stirnfase möglich
- Kein vorgearbeitetes Kernloch notwendig
- Abmessungsgebunden
- Für harte Werkstoffe ab 44 HRC

#### Circular drill thread mills

- For the production of thread hole and internal thread in one work process
- Chamfering the thread hole with face chamfer possible
- A premachined thread hole is not necessary
- For one thread size only
- For hard materials from 44 HRC



### GSF

#### Gewindefräser mit Senkfase

- Zur Herstellung von Senkfase und Innengewinde in einem Arbeitsgang
- Vorgearbeitetes Kernloch notwendig
- Abmessungsgebunden

#### Thread milling cutters with countersinking step

- For the production of countersunk chamfer and internal thread in one work process
- A premachined thread hole is necessary
- For one thread size only

369 - 388

389 - 404

405 - 426



405 - 426

427 - 441

**GSF-R30****Gewindefräser mit Senkfase**

- Zur Herstellung von Senkfase und Innengewinde in einem Arbeitsgang
- Vorgearbeitetes Kernloch notwendig
- Abmessungsgebunden
- Ruhiges Fräsen durch Nuten mit 30° Drallwinkel

**Thread milling cutters with countersinking step**

- For the production of countersunk chamfer and internal thread in one work process
- A premachined thread hole is necessary
- For one thread size only
- Smooth milling thanks to flutes with 30° helix angle

**GSF-Z****Gewindefräser mit Senkfase**

- Zur Herstellung von Senkfase und Innengewinde in einem Arbeitsgang
- Vorgearbeitetes Kernloch notwendig
- Abmessungsgebunden
- Ruhiges Fräsen durch Nuten mit 15° Drallwinkel
- Kurze Bearbeitungszeit durch mehr Nuten

**Thread milling cutters with countersinking step**

- For the production of countersunk chamfer and internal thread in one work process
- A premachined thread hole is necessary
- For one thread size only
- Smooth milling thanks to flutes with 15° helix angle
- Short machining time due to increased number of flutes

**GF****Gewindefräser**

- Zur Herstellung von Innengewinden
- Vorgearbeitetes Kernloch notwendig
- Steigungsgebunden
- Abmessungsübergreifend

**Thread milling cutters**

- For the production of internal threads
- A premachined thread hole is necessary
- For one pitch only
- For different thread sizes

**GF-R30****Gewindefräser**

- Zur Herstellung von Innengewinden
- Vorgearbeitetes Kernloch notwendig
- Steigungsgebunden
- Abmessungsübergreifend
- Ruhiges Fräsen durch Nuten mit 30° Drallwinkel

**Thread milling cutters**

- For the production of internal threads
- A premachined thread hole is necessary
- For one pitch only
- For different thread sizes
- Smooth milling thanks to flutes with 30° helix angle

**GF-R30-Long****Gewindefräser**

- Zur Herstellung von Innengewinden
- Vorgearbeitetes Kernloch notwendig
- Steigungsgebunden
- Abmessungsübergreifend
- Ruhiges Fräsen durch Nuten mit 30° Drallwinkel
- Langes Gewindeteil für tiefe Gewinde

**Thread milling cutters**

- For the production of internal threads
- A premachined thread hole is necessary
- For one pitch only
- For different thread sizes
- Smooth milling thanks to flutes with 30° helix angle
- Long thread part for deep threads

**GF-Z****Gewindefräser**

- Zur Herstellung von Innengewinden
- Vorgearbeitetes Kernloch notwendig
- Steigungsgebunden
- Abmessungsübergreifend
- Ruhiges Fräsen durch Nuten mit 15° Drallwinkel
- Kurze Bearbeitungszeit durch mehr Nuten

**Thread milling cutters**

- For the production of internal threads
- A premachined thread hole is necessary
- For one pitch only
- For different thread sizes
- Smooth milling thanks to flutes with 15° helix angle
- Short machining time due to increased number of flutes

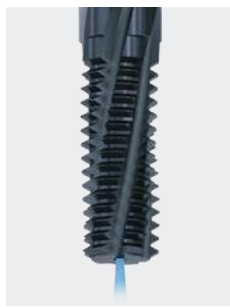
**GF-Z-Extern****Gewindefräser**

- Zur Herstellung von Außengewinden
- Vorgearbeiteter Bolzen notwendig
- Steigungsgebunden
- Abmessungsübergreifend
- Ruhiges Fräsen durch Nuten mit 15° Drallwinkel

**Thread milling cutters**

- For the production of external threads
- A premachined bolt is necessary
- For one pitch only
- For different thread sizes
- Smooth milling thanks to flutes with 15° helix angle

| Product Finder         |
|------------------------|
| $V_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |



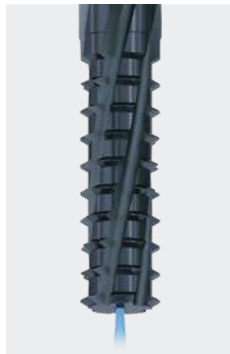
### GF-Vario-Z

#### Gewindefräser

- Zur Herstellung von Innengewinden
- Vorgearbeitetes Kernloch notwendig
- Steigungsgebunden
- Abmessungsübergreifend
- Ruhiges Fräsen durch Nuten mit 15° Drallwinkel
- Kurze Bearbeitungszeit durch mehr Nuten
- Zum Entfernen des unvollständigen Ganges am Gewindeanfang

#### Thread milling cutters

- For the production of internal threads
- A premachined thread hole is necessary
- For one pitch only
- For different thread sizes
- Smooth milling thanks to flutes with 15° helix angle
- Short machining time due to increased number of flutes
- For removing the incomplete thread at the start of the thread



### GF-Vario-Z-AZR1

#### Gewindefräser

- Zur Herstellung von Innengewinden
- Vorgearbeitetes Kernloch notwendig
- Steigungsgebunden
- Abmessungsübergreifend
- Ruhiges Fräsen durch Nuten mit 15° Drallwinkel
- Kurze Bearbeitungszeit durch mehr Nuten
- Zum Entfernen des unvollständigen Ganges am Gewindeanfang
- Stark reduzierte Axialkräfte durch ausgesetzte Zahnreihen

#### Thread milling cutters

- For the production of internal threads
- A premachined thread hole is necessary
- For one pitch only
- For different thread sizes
- Smooth milling thanks to flutes with 15° helix angle
- Short machining time due to increased number of flutes
- For removing the incomplete thread at the start of the thread
- Significantly reduced radial forces due to alternating tooth rows



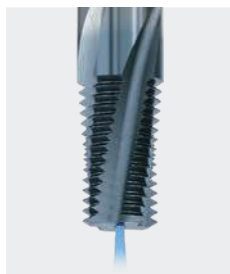
### GF-KEG

#### Gewindefräser

- Zur Herstellung von kegeligen Innengewinden
- Zylindrisch oder besser kegelig vorgearbeitetes Kernloch notwendig
- Steigungsgebunden
- Abmessungsübergreifend

#### Thread milling cutters

- For the production of tapered internal threads
- A premachined cylindrical, or preferably, a tapered thread hole is necessary
- For one pitch only
- For different thread sizes



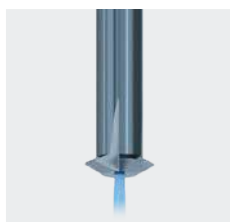
### GF-KEG-R15-Long

#### Gewindefräser

- Zur Herstellung von kegeligen Innengewinden
- Zylindrisch oder besser kegelig vorgearbeitetes Kernloch notwendig
- Steigungsgebunden
- Abmessungsübergreifend
- Ruhiges Fräsen durch Nuten mit 15° Drallwinkel
- Langes Gewindeteil für tiefe Gewinde

#### Thread milling cutters

- For the production of tapered internal threads
- A premachined cylindrical, or preferably, a tapered thread hole is necessary
- For one pitch only
- For different thread sizes
- Smooth milling thanks to flutes with 15° helix angle
- Long thread part for deep threads



### ZGF

#### Zirkular-Gewindefräser

- Zur Herstellung von Innengewinden
- Vorgearbeitetes Kernloch notwendig
- Steigungsübergreifend
- Abmessungsübergreifend
- Anfasen des Kernlochs mit Stirnfase möglich

#### Circular thread milling cutters

- For the production of internal threads
- A premachined thread hole is necessary
- For different thread pitches
- For different thread sizes
- Chamfering the thread hole with face chamfer possible



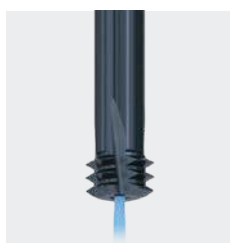
### ZGF-Z

#### Zirkular-Gewindefräser

- Zur Herstellung von Innengewinden
- Vorgearbeitetes Kernloch notwendig
- Steigungsübergreifend
- Abmessungsübergreifend
- Anfasen des Kernlochs mit Stirnfase möglich
- Kurze Bearbeitungszeit durch mehr Nuten

#### Circular thread milling cutters

- For the production of internal threads
- A premachined thread hole is necessary
- For different thread pitches
- For different thread sizes
- Chamfering the thread hole with face chamfer possible
- Short machining time due to increased number of flutes



### ZGF-S-CUT

#### Zirkular-Gewindefräser

- Zur Herstellung von Innengewinden
- Vorgearbeitetes Kernloch notwendig
- Steigungsgebunden
- Abmessungsübergreifend
- Für nichtrostende Stahlwerkstoffe und Spezialwerkstoffe wie Inconel oder Titan

#### Circular thread milling cutters

- For the production of internal threads
- A premachined thread hole is necessary
- For one pitch only
- For different thread sizes
- For stainless steel materials and special materials such as Inconel or titanium



**ZGF-HCUT****Zirkular-Gewindefräser**

- Zur Herstellung von Innengewinden
- Vorgearbeitetes Kernloch notwendig
- Steigungsgebunden
- Abmessungsübergreifend
- Für harte Werkstoffe ab 44 HRC

**Circular thread milling cutters**

- For the production of internal threads
- A premachined thread hole is necessary
- For one pitch only
- For different thread sizes
- For hard materials from 44 HRC

463 - 378

**ZIRK-GF****Zirkular-Gewindefräskörper**

mit einer oder zwei Mehrzahn-Wechselplatten (MZP)

- Zur Herstellung von Innen- oder Außengewinden
- Vorgearbeitetes Kernloch oder vorgearbeiteter Bolzen notwendig
- Steigungsgebunden
- Abmessungsübergreifend

**Circular thread milling bodies**

with one or two multi-tooth exchangeable inserts (MZP)

- For the production of internal or external threads
- A premachined thread hole or a premachined bolt is necessary
- For one pitch only
- For different thread sizes

**ZIRK-GF****Zirkular-Gewindefräskörper**

mit 3-Zahn-Wechselplatte (3ZP)

- Zur Herstellung von Innen- oder Außengewinden
- Vorgearbeitetes Kernloch oder vorgearbeiteter Bolzen notwendig
- Steigungsübergreifend
- Abmessungsübergreifend

**Circular thread milling bodies**

with 3-tooth exchangeable inserts (3ZP)

- For the production of internal or external threads
- A premachined thread hole or a premachined bolt is necessary
- For different thread pitches
- For different thread sizes

479 - 490

**ZIRK-GF****Zirkular-Gewindefräskörper**

mit Stirn-Wechselplatte (SWP)

- Zur Herstellung von Innen- oder Außengewinden
- Vorgearbeitetes Kernloch oder vorgearbeiteter Bolzen notwendig
- Steigungsübergreifend
- Abmessungsübergreifend
- Kurze Bearbeitungszeit durch mehr Nuten

**Circular thread milling bodies**

with exchangeable face insert (SWP)

- For the production of internal or external threads
- A premachined thread hole or a premachined bolt is necessary
- For different thread pitches
- For different thread sizes
- Short machining time due to increased number of flutes

**Gigant****Zirkular-Gewindefräskörper**

mit 2-Zahn- oder 4-Zahn-Wendeplatten

- Zur Herstellung von Innen- oder Außengewinden
- Vorgearbeitetes Kernloch oder vorgearbeiteter Bolzen notwendig
- Steigungsübergreifend
- Abmessungsübergreifend

**Circular thread milling bodies**

with 2-tooth or 4-tooth indexable inserts

- For the production of internal or external threads
- A premachined thread hole or a premachined bolt is necessary
- For different thread pitches
- For different thread sizes

491 - 509

**Gigant****Fräsringe**

für Gigant Zirkular-Gewindefräskörper

- Zum Entfernen des unvollständigen Ganges am Gewindeanfang
- Kein zeitlicher Mehraufwand

**Milling rings**

for Gigant circular thread milling bodies

- For removing the incomplete thread at the start of the thread
- No additional time required

**MoSys****Kombinierbares Plan- und Stufsenk-System**

- Zur Komplettbearbeitung von z.B. Bohrung, Gewinde und Plansenkung

**Counterbore and stepped bore system for free combination**

- For the complete machining of thread hole, thread and spot face

510 - 512



### Mögliche Modifikationen an Gewindefräsern

### Possible modifications on thread milling cutters

#### Stirrfase (ohne oder mit Stirnschnitt)

#### Face chamfer (with or without cutting face)



##### Geeignet für:

- Alle Typen GF und GSF
- Alle Typen BGF (Stirrfase am Bohrteil)

##### Suitable for:

- All types GF and GSF
- All types BGF (face chamfer on the drilling part)

##### Bemerkung:

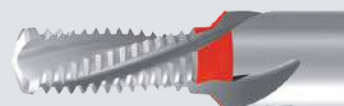
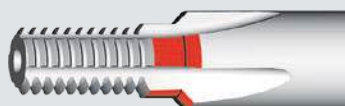
- Stirrfase für zirkulares Anfasen des Kernloches
- Zusätzlicher Stirnschnitt für zirkulares Planfräsen

##### Note:

- Face chamfer for circular chamfering of the thread hole
- Additional cutting face for circular face milling

#### Unvollständigen Gang entfernen

#### Removal of incomplete thread



##### Geeignet für:

- Alle Typen GF, GSF und BGF

##### Suitable for:

- All types GF, GSF and BGF

##### Bemerkung:

- Am schaftseitigen Ende des Frästeils wird eine Stufe mit einer Länge von min. 1 x P hinterschleifen
- Bei entsprechender Eintauchtiefe wird beim Gewindefräsen der unvollständige, gratbehaftete Gewindeauslauf abgefräst (entfernt)

##### Note:

- At the rear end of the thread part, a step with a length of min. 1 x P is relief-ground
- If the tool plunges to a correct depth during the thread milling process, the incomplete thread run-out with its burr is milled off (removed)

#### Halsfreischliff

#### Recessed neck



##### Geeignet für:

- Alle Typen GF und GSF (Senkfase entfällt)

##### Suitable for:

- All types GF and GSF (no countersinking step)

##### Bemerkung:

- Für größere Gewindetiefen (gesamte Gewindetiefe setzt sich aus zwei Fräsdurchläufen zusammen)
- Für einen konstanten Schnittdruck wird die Frästeillänge und die Halslänge im Verhältnis 1:1 aufgeteilt!
- Die Frästeillänge und der Versatz für einen zweiten Fräsdurchlauf sind immer ein ganzzahliges Vielfaches der Profilteilung

##### Note:

- For larger thread depths (total thread depth is achieved by a double milling process)
- For constant cutting pressure, the thread part length and the neck length are arranged in a ratio of 1:1!
- The thread part length and the offset for a second milling process are always a whole-number multiple of the thread pitch



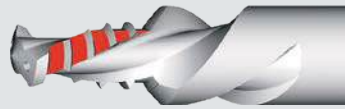
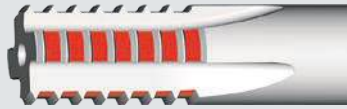
## Mögliche Modifikationen an Gewindefräsern

## Possible modifications on thread milling cutters

## AZR

## Radial ausgesetzte Zahnreihen

## Radially alternating tooth rows



## Geeignet für:

- Alle Typen GF, GSF und BGF

## Suitable for:

- All types GF, GSF and BGF

## Bemerkung:

- Durch radial ausgesetzte Zahnreihen werden die Seitenkräfte beim Gewindefräsen reduziert; die zyklisch fehlenden Gewindelücken werden durch zusätzliche zirkuläre Fräsumläufe gefräst

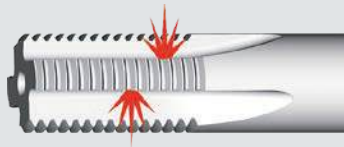
## Note:

- Radially alternating tooth rows help to reduce lateral forces in thread milling; the alternating missing gaps in the thread are produced by additional circular milling orbits

## IKZN

## Innere Kühlschmierstoff-Zufuhr mit Austritt in den Nuten

## Internal coolant supply exiting in the flutes



## Geeignet für:

- Alle Typen GF und GSF

## Suitable for:

- All types GF and GSF

## Bemerkung:

- Stirnseitig verschlossene Axialbohrung für die Bearbeitung von Durchgangslöchern
- Für maximale Stabilität des Frästeils sind die seitlichen Austrittsbohrungen axial versetzt angeordnet

## Note:

- Axial coolant bore closed up at the tool face for the production of through hole threads
- For maximum stability of the cutting part, the lateral coolant holes are axially staggered

## Schaftkühlruten

## Coolant grooves along the shank



## Geeignet für:

- Alle Typen GF, GSF und BGF

## Suitable for:

- All types GF, GSF and BGF

## Bemerkung:

- Für die Bearbeitung von Durchgangslöchern
- Zusätzlich oder ersatzweise zu IKZ oder IKZN
- Ggf. unterstützend zur Kühlung der Senkfase bei GSF und BGF oder des Plansenkers bei MoSys-Anwendungen

## Note:

- For the production of through hole threads
- In addition or as an alternative to IKZ or IKZN
- Possible support in the cooling of the countersinking step of GSF and BGF type tools, or of the plane milling head in MoSys applications

Product  
Finder $v_c / f_z$ 

M

MF

UNC  
UN, UNSUNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys





# Einsatzempfehlungen und Schnittwerte

## Bitte beachten:

Die in den jeweiligen Spalten angegebenen Schnittwerte sind Richtwerte, welche je nach Einsatzbedingungen (Werkzeugspannung, Werkstückspannung, Gewindetiefe, usw.) angepasst werden müssen.

$v_c$  = Schnittgeschwindigkeit [m/min]

$f_z$  = Vorschub pro Zahn [mm]

$f_b$  = Vorschub beim Bohren [mm/U]

# Application recommendation and cutting data

## Please note:

The cutting values listed in the respective columns are standard values which have to be adjusted to individual work conditions (tool clamping, workpiece clamping, thread depth, etc.).

$v_c$  = Cutting speed [m/min]

$f_z$  = Feed per tooth [mm]

$f_b$  = Drilling feed [mm/rev.]

Internationaler Werkstoffvergleich siehe Seite 764 - 785

International comparison of materials, see page 764 - 785

| Einsatzgebiete – Material<br>Applications – material |                                                                 |                                                                 |                                                                       | Material-Beispiele<br>Material examples | Material-Nummern<br>Material numbers |             |
|------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------|--------------------------------------|-------------|
| P                                                    | Stahlwerkstoffe                                                 |                                                                 | Steel materials                                                       |                                         |                                      |             |
|                                                      | 1.1                                                             | Kaltfließpressstähle, Baustähle, Automatenstähle, u.a.          | Cold-extrusion steels, Construction steels, Free-cutting steels, etc. | ≤ 600 N/mm <sup>2</sup>                 | Cq15                                 | 1.1132      |
|                                                      |                                                                 |                                                                 |                                                                       |                                         | S235JR (St37-2)                      | 1.0037      |
|                                                      |                                                                 |                                                                 |                                                                       |                                         | 10SPb20                              | 1.0722      |
|                                                      | 2.1                                                             | Baustähle, Einsatzstähle, Stahlguss, u.a.                       | Construction steels, Cementation steels, Steel castings, etc.         | ≤ 800 N/mm <sup>2</sup>                 | E360 (St70-2)                        | 1.0070      |
|                                                      |                                                                 |                                                                 |                                                                       |                                         | 16MnCr5                              | 1.7131      |
|                                                      |                                                                 |                                                                 |                                                                       |                                         | GS-25CrMo4                           | 1.7218      |
|                                                      | 3.1                                                             | Einsatzstähle, Vergütungsstähle, Kaltarbeitsstähle, u.a.        | Cementation steels, Heat-treatable steels, Cold work steels, etc.     | ≤ 1000 N/mm <sup>2</sup>                | 20MoCr3                              | 1.7320      |
|                                                      |                                                                 |                                                                 |                                                                       |                                         | 42CrMo4                              | 1.7225      |
|                                                      |                                                                 |                                                                 |                                                                       |                                         | 102Cr6                               | 1.2067      |
| 4.1                                                  | Vergütungsstähle, Kaltarbeitsstähle, Nitrierstähle, u.a.        | Heat-treatable steels, Cold work steels, Nitriding steels, etc. | ≤ 1200 N/mm <sup>2</sup>                                              | 50CrMo4                                 | 1.7228                               |             |
|                                                      |                                                                 |                                                                 |                                                                       | X45NiCrMo4                              | 1.2767                               |             |
|                                                      |                                                                 |                                                                 |                                                                       | 31CrMo12                                | 1.8515                               |             |
| 5.1                                                  | Hochlegierte Stähle, Kaltarbeitsstähle, Warmarbeitsstähle, u.a. | High-alloyed steels, Cold work steels, Hot work steels, etc.    | ≤ 1400 N/mm <sup>2</sup>                                              | X38CrMoV5-3                             | 1.2367                               |             |
|                                                      |                                                                 |                                                                 |                                                                       | X100CrMoV8-1-1                          | 1.2990                               |             |
|                                                      |                                                                 |                                                                 |                                                                       | X40CrMoV5-1                             | 1.2344                               |             |
| M                                                    | Nichtrostende Stahlwerkstoffe                                   |                                                                 | Stainless steel materials                                             |                                         |                                      |             |
|                                                      | 1.1                                                             | Ferritisch, martensitisch                                       | Ferritic, martensitic                                                 | ≤ 950 N/mm <sup>2</sup>                 | X2CrTi12                             | 1.4512      |
|                                                      | 2.1                                                             | Austenitisch                                                    | Austenitic                                                            | ≤ 950 N/mm <sup>2</sup>                 | X6CrNiMoTi17-12-2                    | 1.4571      |
|                                                      | 3.1                                                             | Austenitisch-ferritisch (Duplex)                                | Austenitic-ferritic (Duplex)                                          | ≤ 1100 N/mm <sup>2</sup>                | X2CrNiMoN22-5-3                      | 1.4462      |
|                                                      | 4.1                                                             | Austenitisch-ferritisch hitzebeständig (Super Duplex)           | Austenitic-ferritic heat-resistant (Super Duplex)                     | ≤ 1250 N/mm <sup>2</sup>                | X2CrNiMoN25-7-4                      | 1.4410      |
| K                                                    | Gusswerkstoffe                                                  |                                                                 | Cast materials                                                        |                                         |                                      |             |
|                                                      | 1.1                                                             | Gusseisen mit Lamellengrafit (GJL)                              | Cast iron with lamellar graphite (GJL)                                | 100-250 N/mm <sup>2</sup>               | EN-GJL-200 (GG20)                    | EN-JL-1030  |
|                                                      | 250-450 N/mm <sup>2</sup>                                       |                                                                 |                                                                       |                                         | EN-GJL-300 (GG30)                    | EN-JL-1050  |
|                                                      | 2.1                                                             | Gusseisen mit Kugelgrafit (GJS)                                 | Cast iron with nodular graphite (GJS)                                 | 350-500 N/mm <sup>2</sup>               | EN-GJS-400-15 (GGG40)                | EN-JS-1030  |
|                                                      | 500-900 N/mm <sup>2</sup>                                       |                                                                 |                                                                       |                                         | EN-GJS-700-2 (GGG70)                 | EN-JS-1070  |
|                                                      | 3.1                                                             | Gusseisen mit Vermiculargrafit (GJV)                            | Cast iron with vermicular graphite (GJV)                              | 300-400 N/mm <sup>2</sup>               | GJV 300                              |             |
|                                                      | 400-500 N/mm <sup>2</sup>                                       |                                                                 |                                                                       |                                         | GJV 450                              |             |
|                                                      | 3.2                                                             |                                                                 |                                                                       | 250-500 N/mm <sup>2</sup>               | EN-GJMW-350-4 (GTW-35)               | EN-JM-1010  |
|                                                      | 4.1                                                             |                                                                 |                                                                       |                                         | EN-GJMB-450-6 (GTS-45)               | EN-JM-1140  |
|                                                      | 4.2                                                             | Temperguss (GTMW, GTMB)                                         | Malleable cast iron (GTMW, GTMB)                                      | 500-800 N/mm <sup>2</sup>               |                                      |             |
| N                                                    | Nichteisenwerkstoffe                                            |                                                                 | Non ferrous materials                                                 |                                         |                                      |             |
|                                                      | Aluminium-Legierungen                                           |                                                                 | Aluminium alloys                                                      |                                         |                                      |             |
|                                                      | 1.1                                                             | Aluminium-Knetlegierungen                                       | Aluminium wrought alloys                                              | ≤ 200 N/mm <sup>2</sup>                 | EN AW-AIMn1                          | EN AW-3103  |
|                                                      | 1.2                                                             |                                                                 |                                                                       | ≤ 350 N/mm <sup>2</sup>                 | EN AW-AIMgSi                         | EN AW-6060  |
|                                                      | 1.3                                                             |                                                                 |                                                                       | ≤ 550 N/mm <sup>2</sup>                 | EN AW-AlZn5Mg3Cu                     | EN AW-7022  |
|                                                      | 1.4                                                             |                                                                 |                                                                       | Si ≤ 7%                                 | EN AC-AIMg5                          | EN AC-51300 |
|                                                      | 1.5                                                             | Aluminium-Gusslegierungen                                       | Aluminium cast alloys                                                 | 7% < Si ≤ 12%                           | EN AC-AISi9Cu3                       | EN AC-46500 |
|                                                      | 1.6                                                             |                                                                 |                                                                       | 12% < Si ≤ 17%                          | GD-AISi17Cu4FeMg                     |             |
|                                                      | Kupfer-Legierungen                                              |                                                                 | Copper alloys                                                         |                                         |                                      |             |
|                                                      | 2.1                                                             | Reinkupfer, niedriglegiertes Kupfer                             | Pure copper, low-alloyed copper                                       | ≤ 400 N/mm <sup>2</sup>                 | E-Cu 57                              | EN CW 004 A |
|                                                      | 2.2                                                             | Kupfer-Zink-Legierungen (Messing, langspanend)                  | Copper-zinc alloys (brass, long-chipping)                             | ≤ 550 N/mm <sup>2</sup>                 | CuZn37 (Ms63)                        | EN CW 508 L |
|                                                      | 2.3                                                             | Kupfer-Zink-Legierungen (Messing, kurzspanend)                  | Copper-zinc alloys (brass, short-chipping)                            | ≤ 550 N/mm <sup>2</sup>                 | CuZn36Pb3 (Ms58)                     | EN CW 603 N |
|                                                      | 2.4                                                             | Kupfer-Aluminium-Legierungen (Alubronze, langspanend)           | Copper-aluminium alloys (alu bronze, long-chipping)                   | ≤ 800 N/mm <sup>2</sup>                 | CuAl10Ni5Fe4                         | EN CW 307 G |
|                                                      | 2.5                                                             | Kupfer-Zinn-Legierungen (Zinnbronze, langspanend)               | Copper-tin alloys (tin bronze, long-chipping)                         | ≤ 700 N/mm <sup>2</sup>                 | CuSn8P                               | EN CW 459 K |
|                                                      | 2.6                                                             | Kupfer-Zinn-Legierungen (Zinnbronze, kurzspanend)               | Copper-tin alloys (tin bronze, short-chipping)                        | ≤ 400 N/mm <sup>2</sup>                 | CuSn7 ZnPb (Rg7)                     | 2.1090      |
|                                                      | 2.7                                                             | Kupfer-Sonderlegierungen                                        | Special copper alloys                                                 | ≤ 600 N/mm <sup>2</sup>                 | (AMPCO® 8)                           |             |
|                                                      | 2.8                                                             |                                                                 |                                                                       | ≤ 1400 N/mm <sup>2</sup>                | (AMPCO® 45)                          |             |
|                                                      | Magnesium-Legierungen                                           |                                                                 | Magnesium alloys                                                      |                                         |                                      |             |
|                                                      | 3.1                                                             | Magnesium-Knetlegierungen                                       | Magnesium wrought alloys                                              | ≤ 500 N/mm <sup>2</sup>                 | MgAl6Zn                              | 3.5612      |
|                                                      | 3.2                                                             | Magnesium-Gusslegierungen                                       | Magnesium cast alloys                                                 | ≤ 500 N/mm <sup>2</sup>                 | EN-MCMgAl9Zn1                        | EN-MC21120  |
| Kunststoffe                                          |                                                                 | Synthetics                                                      |                                                                       |                                         |                                      |             |
| 4.1                                                  | Duroplaste (kurzspanend)                                        | Duroplastics (short-chipping)                                   |                                                                       | Bakelit, Pertinax                       |                                      |             |
| 4.2                                                  | Thermoplaste (langspanend)                                      | Thermoplastics (long-chipping)                                  |                                                                       | PMMA, POM, PVC                          |                                      |             |
| 4.3                                                  | Faserverstärkte Kunststoffe (Faseranteil ≤ 30%)                 | Fibre-reinforced synthetics (fibre content ≤ 30%)               |                                                                       | GFK, CFK, AFK                           |                                      |             |
| 4.4                                                  | Faserverstärkte Kunststoffe (Faseranteil > 30%)                 | Fibre-reinforced synthetics (fibre content > 30%)               |                                                                       | GFK, CFK, AFK                           |                                      |             |
| Besondere Werkstoffe                                 |                                                                 | Special materials                                               |                                                                       |                                         |                                      |             |
| 5.1                                                  | Grafit                                                          | Graphite                                                        |                                                                       | C 8000                                  |                                      |             |
| 5.2                                                  | Wolfram-Kupfer-Legierungen                                      | Tungsten-copper alloys                                          |                                                                       | W-Cu 80/20                              |                                      |             |
| 5.3                                                  | Verbundwerkstoffe                                               | Composite materials                                             |                                                                       | Hyllite, Alucobond                      |                                      |             |
| S                                                    | Spezialwerkstoffe                                               |                                                                 | Special materials                                                     |                                         |                                      |             |
|                                                      | Titan-Legierungen                                               |                                                                 | Titanium alloys                                                       |                                         |                                      |             |
|                                                      | 1.1                                                             | Reintitan                                                       | Pure titanium                                                         | ≤ 450 N/mm <sup>2</sup>                 | Ti1                                  | 3.7025      |
|                                                      | 1.2                                                             | Titan-Legierungen                                               | Titanium alloys                                                       | ≤ 900 N/mm <sup>2</sup>                 | TiAl6V4                              | 3.7165      |
|                                                      | 1.3                                                             |                                                                 |                                                                       | ≤ 1250 N/mm <sup>2</sup>                | TiAl4Mo4Sn2                          | 3.7185      |
|                                                      | Nickel-, Kobalt- und Eisen-Legierungen                          |                                                                 | Nickel alloys, cobalt alloys and iron alloys                          |                                         |                                      |             |
|                                                      | 2.1                                                             | Reinnickel                                                      | Pure nickel                                                           | ≤ 600 N/mm <sup>2</sup>                 | Ni 99.6                              | 2.4060      |
|                                                      | 2.2                                                             | Nickel-Basis-Legierungen                                        | Nickel-base alloys                                                    | ≤ 1000 N/mm <sup>2</sup>                | Monel 400                            | 2.4360      |
|                                                      | 2.3                                                             |                                                                 |                                                                       | ≤ 1600 N/mm <sup>2</sup>                | Inconel 718                          | 2.4668      |
|                                                      | 2.4                                                             | Kobalt-Basis-Legierungen                                        | Cobalt-base alloys                                                    | ≤ 1000 N/mm <sup>2</sup>                | Udimet 605                           |             |
| 2.5                                                  | ≤ 1600 N/mm <sup>2</sup>                                        |                                                                 |                                                                       | Haynes 25                               | 2.4964                               |             |
| 2.6                                                  | Eisen-Basis-Legierungen                                         | Iron-base alloys                                                | ≤ 1500 N/mm <sup>2</sup>                                              | Incoloy 800                             | 1.4958                               |             |
| H                                                    | Harte Werkstoffe                                                |                                                                 | Hard materials                                                        |                                         |                                      |             |
|                                                      | 1.1                                                             | Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 44 - 50 HRC                             | Weldox 1100                          |             |
|                                                      | 1.2                                                             |                                                                 |                                                                       | 50 - 55 HRC                             | Hardox 550                           |             |
|                                                      | 1.3                                                             |                                                                 |                                                                       | 55 - 60 HRC                             | Armox 600T                           |             |
|                                                      | 1.4                                                             |                                                                 |                                                                       | 60 - 63 HRC                             | Ferro-Titanit                        |             |
|                                                      | 1.5                                                             |                                                                 |                                                                       | 63 - 66 HRC                             | HSSF                                 |             |

| BGF-Z2                                                                            |                                                                                   | BGF-Z3                                                                            |                                                                                   | BGF-Z4                                                                            |                                                                                   |                                                   |                                    |                                       |   |     |   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------|------------------------------------|---------------------------------------|---|-----|---|
|  |  |  |  |  |  |                                                   |                                    |                                       |   |     |   |
| Unbeschichtet<br>Uncoated                                                         | TICN                                                                              | Unbeschichtet<br>Uncoated                                                         | TICN                                                                              | TICN                                                                              | TIALN-T3                                                                          |                                                   |                                    |                                       |   |     |   |
| $v_c$ [m/min]<br>min. empf. max.<br>rec.                                          | $v_c$ [m/min]<br>min. empf. max.<br>rec.                                          | $v_c$ [m/min]<br>min. empf. max.<br>rec.                                          | $v_c$ [m/min]<br>min. empf. max.<br>rec.                                          | $v_c$ [m/min]<br>min. empf. max.<br>rec.                                          | $v_c$ [m/min]<br>min. empf. max.<br>rec.                                          | $f_b$ [mm/U · mm/rev.]<br>min. empf. max.<br>rec. |                                    | $f_z$ [mm]<br>min. empf. max.<br>rec. |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    |                                       |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    |                                       |   | 1.1 | P |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    |                                       |   | 2.1 |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    |                                       |   | 3.1 |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    |                                       |   | 4.1 |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    |                                       |   | 5.1 |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    |                                       |   | 1.1 | M |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    |                                       |   | 2.1 |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    |                                       |   | 3.1 |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    |                                       |   | 4.1 |   |
| 70 100 130                                                                        | 84 120 156                                                                        | 70 100 130                                                                        | 84 120 156                                                                        | 70 100 130                                                                        | 84 120 156                                                                        | 0,018 0,030 0,042 x d <sub>1</sub>                | 0,006 0,010 0,014 x d <sub>F</sub> | 1.1                                   | K |     |   |
| 70 100 130                                                                        | 84 120 156                                                                        | 70 100 130                                                                        | 84 120 156                                                                        | 70 100 130                                                                        | 84 120 156                                                                        | 0,018 0,030 0,042 x d <sub>1</sub>                | 0,006 0,010 0,014 x d <sub>F</sub> | 1.2                                   |   |     |   |
| 70 100 130                                                                        | 84 120 156                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0,012 0,020 0,028 x d <sub>1</sub>                | 0,006 0,010 0,014 x d <sub>F</sub> | 2.1                                   |   |     |   |
| 70 100 130                                                                        | 84 120 156                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0,012 0,020 0,028 x d <sub>1</sub>                | 0,006 0,010 0,014 x d <sub>F</sub> | 2.2                                   |   |     |   |
| 70 100 130                                                                        | 84 120 156                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0,018 0,030 0,042 x d <sub>1</sub>                | 0,006 0,010 0,014 x d <sub>F</sub> | 3.1                                   |   |     |   |
| 70 100 130                                                                        | 84 120 156                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0,018 0,030 0,042 x d <sub>1</sub>                | 0,006 0,010 0,014 x d <sub>F</sub> | 3.2                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 4.1                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 4.2                                   |   |     |   |
| 126 180 234                                                                       | 126 180 234                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0,012 0,020 0,028 x d <sub>1</sub>                | 0,007 0,012 0,017 x d <sub>F</sub> | 1.1                                   | N |     |   |
| 126 180 234                                                                       | 126 180 234                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0,012 0,020 0,028 x d <sub>1</sub>                | 0,007 0,012 0,017 x d <sub>F</sub> | 1.2                                   |   |     |   |
| 126 180 234                                                                       | 126 180 234                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0,012 0,020 0,028 x d <sub>1</sub>                | 0,007 0,012 0,017 x d <sub>F</sub> | 1.3                                   |   |     |   |
| 126 180 234                                                                       | 126 180 234                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0,018 0,030 0,042 x d <sub>1</sub>                | 0,007 0,012 0,017 x d <sub>F</sub> | 1.4                                   |   |     |   |
| 126 180 234                                                                       | 175 250 325                                                                       | 70 100 130                                                                        | 175 250 325                                                                       | 175 250 325                                                                       | 175 250 325                                                                       | 0,018 0,030 0,042 x d <sub>1</sub>                | 0,007 0,012 0,017 x d <sub>F</sub> | 1.5                                   |   |     |   |
|                                                                                   | 105 150 195                                                                       |                                                                                   | 105 150 195                                                                       | 105 150 195                                                                       | 105 150 195                                                                       | 0,018 0,030 0,042 x d <sub>1</sub>                | 0,007 0,012 0,017 x d <sub>F</sub> | 1.6                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 2.1                                   |   |     |   |
| 126 180 234                                                                       | 175 250 325                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0,015 0,025 0,035 x d <sub>1</sub>                | 0,007 0,012 0,017 x d <sub>F</sub> | 2.2                                   |   |     |   |
| 126 180 234                                                                       | 175 250 325                                                                       | 126 180 234                                                                       | 175 250 325                                                                       | 175 250 325                                                                       | 175 250 325                                                                       | 0,015 0,025 0,035 x d <sub>1</sub>                | 0,007 0,012 0,017 x d <sub>F</sub> | 2.3                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 2.4                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 2.5                                   |   |     |   |
| 105 150 195                                                                       | 126 180 234                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0,018 0,030 0,042 x d <sub>1</sub>                | 0,007 0,012 0,017 x d <sub>F</sub> | 2.6                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 2.7                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 2.8                                   |   |     |   |
| 126 180 234                                                                       | 175 250 325                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0,018 0,030 0,042 x d <sub>1</sub>                | 0,007 0,012 0,017 x d <sub>F</sub> | 3.1                                   |   |     |   |
| 126 180 234                                                                       | 175 250 325                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0,021 0,035 0,049 x d <sub>1</sub>                | 0,007 0,012 0,017 x d <sub>F</sub> | 3.2                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    |                                       |   |     |   |
| 70 100 130                                                                        | 175 250 325                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0,021 0,035 0,049 x d <sub>1</sub>                | 0,007 0,012 0,017 x d <sub>F</sub> | 4.1                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 4.2                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 4.3                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 4.4                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 5.1                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 5.2                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 5.3                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 1.1                                   | S |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 1.2                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 1.3                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 2.1                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 2.2                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 2.3                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 2.4                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 2.5                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 2.6                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 1.1                                   | H |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 1.2                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 1.3                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 1.4                                   |   |     |   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                   |                                    | 1.5                                   |   |     |   |

Product Finder

$v_c / f_z$

M

MF

UNC  
UN, UNS

UNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



360

|                |                                                                                       |
|----------------|---------------------------------------------------------------------------------------|
| Product Finder |                                                                                       |
| $v_c / f_z$    | M                                                                                     |
|                | MF                                                                                    |
|                | UNC<br>UN, UNS                                                                        |
|                | UNF<br>UNEF                                                                           |
|                | G, Rp                                                                                 |
|                | NPT, NPTF<br>Rc, W                                                                    |
|                | BSW, BSF                                                                              |
|                | Pg                                                                                    |
|                | MJ<br>UNJC, UNJF                                                                      |
|                | EG (STI)                                                                              |
|                | SELF-LOCK                                                                             |
|                | Tr                                                                                    |
|                | Zubehör<br>Accessories                                                                |
|                | BGF                                                                                   |
|                | ZBGF                                                                                  |
|                | GSF                                                                                   |
|                | GF                                                                                    |
|                | GF-VZ                                                                                 |
|                | GF-KEG                                                                                |
|                | ZGF                                                                                   |
|                | ZIRK-GF                                                                               |
|                | Gigant                                                                                |
|                | MoSys                                                                                 |
|                |  |

|                        |  | GF |  | GF-R30 |  | GF-R30-Long |  |  |  |  |
|------------------------|--|----|--|--------|--|-------------|--|--|--|--|
| Product Finder         |  |    |  |        |  |             |  |  |  |  |
| $v_c / f_z$            |  |    |  |        |  |             |  |  |  |  |
| M                      |  |    |  |        |  |             |  |  |  |  |
| MF                     |  |    |  |        |  |             |  |  |  |  |
| UNC<br>UN, UNS         |  |    |  |        |  |             |  |  |  |  |
| UNF<br>UNEF            |  |    |  |        |  |             |  |  |  |  |
| G, Rp                  |  |    |  |        |  |             |  |  |  |  |
| NPT, NPTF<br>Rc, W     |  |    |  |        |  |             |  |  |  |  |
| BSW, BSF               |  |    |  |        |  |             |  |  |  |  |
| Pg                     |  |    |  |        |  |             |  |  |  |  |
| MJ<br>UNJC, UNJF       |  |    |  |        |  |             |  |  |  |  |
| EG (STI)               |  |    |  |        |  |             |  |  |  |  |
| SELF-LOCK              |  |    |  |        |  |             |  |  |  |  |
| Tr                     |  |    |  |        |  |             |  |  |  |  |
| Zubehör<br>Accessories |  |    |  |        |  |             |  |  |  |  |
| BGF                    |  |    |  |        |  |             |  |  |  |  |
| ZBGF                   |  |    |  |        |  |             |  |  |  |  |
| GSF                    |  |    |  |        |  |             |  |  |  |  |
| GF                     |  |    |  |        |  |             |  |  |  |  |
| GF-VZ                  |  |    |  |        |  |             |  |  |  |  |
| GF-KEG                 |  |    |  |        |  |             |  |  |  |  |
| ZGF                    |  |    |  |        |  |             |  |  |  |  |
| ZIRK-GF                |  |    |  |        |  |             |  |  |  |  |
| Gigant                 |  |    |  |        |  |             |  |  |  |  |
| MoSys                  |  |    |  |        |  |             |  |  |  |  |
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|                |                                                                                       |
|----------------|---------------------------------------------------------------------------------------|
| Product Finder | $v_c / f_z$                                                                           |
|                | M                                                                                     |
|                | MF                                                                                    |
|                | UNC<br>UN, UNS                                                                        |
|                | UNF<br>UNEF                                                                           |
|                | G, Rp                                                                                 |
|                | NPT, NPTF<br>Rc, W                                                                    |
|                | BSW, BSF                                                                              |
|                | Pg                                                                                    |
|                | MJ<br>UNJC, UNJF                                                                      |
|                | EG (STI)                                                                              |
|                | SELF-LOCK                                                                             |
|                | Tr                                                                                    |
|                | Zubehör<br>Accessories                                                                |
|                | BGF                                                                                   |
|                | ZBGF                                                                                  |
|                | GSF                                                                                   |
|                | GF                                                                                    |
|                | GF-VZ                                                                                 |
|                | GF-KEG                                                                                |
|                | ZGF                                                                                   |
|                | ZIRK-GF                                                                               |
|                | Gigant                                                                                |
|                | MoSys                                                                                 |
|                |  |

|                                                                                   |                   | GF-KEG             |                    | GF-KEG-R15-Long    |                                                 |                                                 |                    |                                                 |
|-----------------------------------------------------------------------------------|-------------------|--------------------|--------------------|--------------------|-------------------------------------------------|-------------------------------------------------|--------------------|-------------------------------------------------|
| Product Finder                                                                    |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| v <sub>c</sub> / f <sub>z</sub>                                                   |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| M                                                                                 |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| MF                                                                                |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| UNC<br>UN, UNS                                                                    |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| UNF<br>UNEF                                                                       |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| G, Rp                                                                             |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| NPT, NPTF<br>Rc, W                                                                |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| BSW, BSF                                                                          |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| Pg                                                                                |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| MJ<br>UNJC, UNJF                                                                  |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| EG (STI)                                                                          |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| SELF-LOCK                                                                         |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| Tr                                                                                |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| Zubehör<br>Accessories                                                            |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| BGF                                                                               |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| ZBGF                                                                              |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| GSF                                                                               |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| GF                                                                                |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| GF-VZ                                                                             |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| GF-KEG                                                                            |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| ZGF                                                                               |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| ZIRK-GF                                                                           |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| Gigant                                                                            |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| MoSys                                                                             |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
|  |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
|                                                                                   |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
|                                                                                   |                   | P                  | 1.1                | 63 <b>90</b> 117   | 126 <b>180</b> 234                              | 63 <b>90</b> 117                                | 126 <b>180</b> 234 | 0,006 <b>0,010</b> 0,014 <b>x d<sub>F</sub></b> |
|                                                                                   |                   |                    | 2.1                | 53 <b>75</b> 98    | 105 <b>150</b> 195                              | 53 <b>75</b> 98                                 | 105 <b>150</b> 195 | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> |
|                                                                                   |                   |                    | 3.1                | 42 <b>60</b> 78    | 84 <b>120</b> 156                               | 42 <b>60</b> 78                                 | 84 <b>120</b> 156  | 0,005 <b>0,008</b> 0,011 <b>x d<sub>F</sub></b> |
|                                                                                   |                   |                    | 4.1                | 35 <b>50</b> 65    | 70 <b>100</b> 130                               | 35 <b>50</b> 65                                 | 70 <b>100</b> 130  | 0,004 <b>0,007</b> 0,010 <b>x d<sub>F</sub></b> |
|                                                                                   |                   |                    | 5.1                | 28 <b>40</b> 52    | 56 <b>80</b> 104                                | 28 <b>40</b> 52                                 | 56 <b>80</b> 104   | 0,004 <b>0,006</b> 0,008 <b>x d<sub>F</sub></b> |
|                                                                                   |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
|                                                                                   |                   | M                  | 1.1                |                    | 63 <b>90</b> 117                                |                                                 | 63 <b>90</b> 117   | 0,005 <b>0,008</b> 0,011 <b>x d<sub>F</sub></b> |
|                                                                                   |                   |                    | 2.1                |                    | 63 <b>90</b> 117                                |                                                 | 63 <b>90</b> 117   | 0,005 <b>0,008</b> 0,011 <b>x d<sub>F</sub></b> |
|                                                                                   |                   |                    | 3.1                |                    | 42 <b>60</b> 78                                 |                                                 | 42 <b>60</b> 78    | 0,004 <b>0,007</b> 0,010 <b>x d<sub>F</sub></b> |
|                                                                                   |                   |                    | 4.1                |                    | 35 <b>50</b> 65                                 |                                                 | 35 <b>50</b> 65    | 0,004 <b>0,006</b> 0,008 <b>x d<sub>F</sub></b> |
|                                                                                   |                   | K                  | 1.1                | 70 <b>100</b> 130  | 112 <b>160</b> 208                              | 70 <b>100</b> 130                               | 112 <b>160</b> 208 | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> |
|                                                                                   |                   |                    | 1.2                | 70 <b>100</b> 130  | 112 <b>160</b> 208                              | 70 <b>100</b> 130                               | 112 <b>160</b> 208 | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> |
|                                                                                   |                   |                    | 2.1                | 63 <b>90</b> 117   | 105 <b>150</b> 195                              | 63 <b>90</b> 117                                | 105 <b>150</b> 195 | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> |
|                                                                                   |                   |                    | 2.2                | 63 <b>90</b> 117   | 105 <b>150</b> 195                              | 63 <b>90</b> 117                                | 105 <b>150</b> 195 | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> |
|                                                                                   |                   |                    | 3.1                | 63 <b>90</b> 117   | 105 <b>150</b> 195                              | 63 <b>90</b> 117                                | 105 <b>150</b> 195 | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> |
|                                                                                   |                   |                    | 3.2                | 63 <b>90</b> 117   | 105 <b>150</b> 195                              | 63 <b>90</b> 117                                | 105 <b>150</b> 195 | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> |
|                                                                                   |                   |                    | 4.1                | 63 <b>90</b> 117   | 105 <b>150</b> 195                              | 63 <b>90</b> 117                                | 105 <b>150</b> 195 | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> |
|                                                                                   |                   |                    | 4.2                | 63 <b>90</b> 117   | 105 <b>150</b> 195                              | 63 <b>90</b> 117                                | 105 <b>150</b> 195 | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> |
| N                                                                                 |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
|                                                                                   |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
|                                                                                   | 1.1               | 126 <b>180</b> 234 | 196 <b>280</b> 364 | 126 <b>180</b> 234 | 196 <b>280</b> 364                              | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 1.2               | 126 <b>180</b> 234 | 196 <b>280</b> 364 | 126 <b>180</b> 234 | 196 <b>280</b> 364                              | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 1.3               | 126 <b>180</b> 234 | 196 <b>280</b> 364 | 126 <b>180</b> 234 | 196 <b>280</b> 364                              | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 1.4               | 126 <b>180</b> 234 | 196 <b>280</b> 364 | 126 <b>180</b> 234 | 196 <b>280</b> 364                              | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 1.5               | 126 <b>180</b> 234 | 196 <b>280</b> 364 | 126 <b>180</b> 234 | 196 <b>280</b> 364                              | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 1.6               |                    | 105 <b>150</b> 195 |                    | 105 <b>150</b> 195                              | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
|                                                                                   | 2.1               | 126 <b>180</b> 234 | 196 <b>280</b> 364 | 126 <b>180</b> 234 | 196 <b>280</b> 364                              | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 2.2               | 126 <b>180</b> 234 | 196 <b>280</b> 364 | 126 <b>180</b> 234 | 196 <b>280</b> 364                              | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 2.3               | 126 <b>180</b> 234 | 196 <b>280</b> 364 | 126 <b>180</b> 234 | 196 <b>280</b> 364                              | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 2.4               | 77 <b>110</b> 143  | 126 <b>180</b> 234 | 77 <b>110</b> 143  | 126 <b>180</b> 234                              | 0,006 <b>0,010</b> 0,014 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 2.5               | 77 <b>110</b> 143  | 126 <b>180</b> 234 | 77 <b>110</b> 143  | 126 <b>180</b> 234                              | 0,006 <b>0,010</b> 0,014 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 2.6               | 105 <b>150</b> 195 | 126 <b>180</b> 234 | 105 <b>150</b> 195 | 126 <b>180</b> 234                              | 0,006 <b>0,010</b> 0,014 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 2.7               |                    | 42 <b>60</b> 78    |                    | 42 <b>60</b> 78                                 | 0,005 <b>0,008</b> 0,011 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 2.8               |                    | 35 <b>50</b> 65    |                    | 35 <b>50</b> 65                                 | 0,005 <b>0,008</b> 0,011 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
|                                                                                   | 3.1               | 126 <b>180</b> 234 | 196 <b>280</b> 364 | 126 <b>180</b> 234 | 196 <b>280</b> 364                              | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 3.2               | 126 <b>180</b> 234 | 196 <b>280</b> 364 | 126 <b>180</b> 234 | 196 <b>280</b> 364                              | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
|                                                                                   | 4.1               | 77 <b>110</b> 143  | 196 <b>280</b> 364 | 77 <b>110</b> 143  | 196 <b>280</b> 364                              | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                    |                                                 |
| 4.2                                                                               | 77 <b>110</b> 143 | 196 <b>280</b> 364 | 77 <b>110</b> 143  | 196 <b>280</b> 364 | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                                                 |                    |                                                 |
| 4.3                                                                               |                   | 105 <b>150</b> 195 |                    | 105 <b>150</b> 195 | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                                                 |                    |                                                 |
| 4.4                                                                               |                   | 105 <b>150</b> 195 |                    | 105 <b>150</b> 195 | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                                                 |                    |                                                 |
|                                                                                   |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| 5.1                                                                               | 70 <b>100</b> 130 | 105 <b>150</b> 195 | 70 <b>100</b> 130  | 105 <b>150</b> 195 | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                                                 |                    |                                                 |
| 5.2                                                                               | 21 <b>30</b> 39   | 35 <b>50</b> 65    | 21 <b>30</b> 39    | 35 <b>50</b> 65    | 0,004 <b>0,007</b> 0,010 <b>x d<sub>F</sub></b> |                                                 |                    |                                                 |
| 5.3                                                                               |                   | 105 <b>150</b> 195 |                    | 105 <b>150</b> 195 | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> |                                                 |                    |                                                 |
| S                                                                                 |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
|                                                                                   |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
|                                                                                   | 1.1               | 28 <b>40</b> 52    | 42 <b>60</b> 78    | 28 <b>40</b> 52    | 42 <b>60</b> 78                                 | 0,004 <b>0,006</b> 0,008 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 1.2               | 28 <b>40</b> 52    | 42 <b>60</b> 78    | 28 <b>40</b> 52    | 42 <b>60</b> 78                                 | 0,004 <b>0,006</b> 0,008 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 1.3               | 21 <b>30</b> 39    | 35 <b>50</b> 65    | 21 <b>30</b> 39    | 35 <b>50</b> 65                                 | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
|                                                                                   | 2.1               |                    | 32 <b>45</b> 59    |                    | 32 <b>45</b> 59                                 | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 2.2               |                    | 32 <b>45</b> 59    |                    | 32 <b>45</b> 59                                 | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 2.3               |                    | 21 <b>30</b> 39    |                    | 21 <b>30</b> 39                                 | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 2.4               |                    | 32 <b>45</b> 59    |                    | 32 <b>45</b> 59                                 | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> |                    |                                                 |
| 2.5                                                                               |                   | 21 <b>30</b> 39    |                    | 21 <b>30</b> 39    | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> |                                                 |                    |                                                 |
| 2.6                                                                               |                   | 21 <b>30</b> 39    |                    | 21 <b>30</b> 39    | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> |                                                 |                    |                                                 |
| H                                                                                 |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |
|                                                                                   | 1.1               |                    | 32 <b>45</b> 59    |                    | 32 <b>45</b> 59                                 | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 1.2               |                    | 28 <b>40</b> 52    |                    | 28 <b>40</b> 52                                 | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> |                    |                                                 |
|                                                                                   | 1.3               |                    |                    |                    |                                                 |                                                 |                    |                                                 |
|                                                                                   | 1.4               |                    |                    |                    |                                                 |                                                 |                    |                                                 |
| 1.5                                                                               |                   |                    |                    |                    |                                                 |                                                 |                    |                                                 |

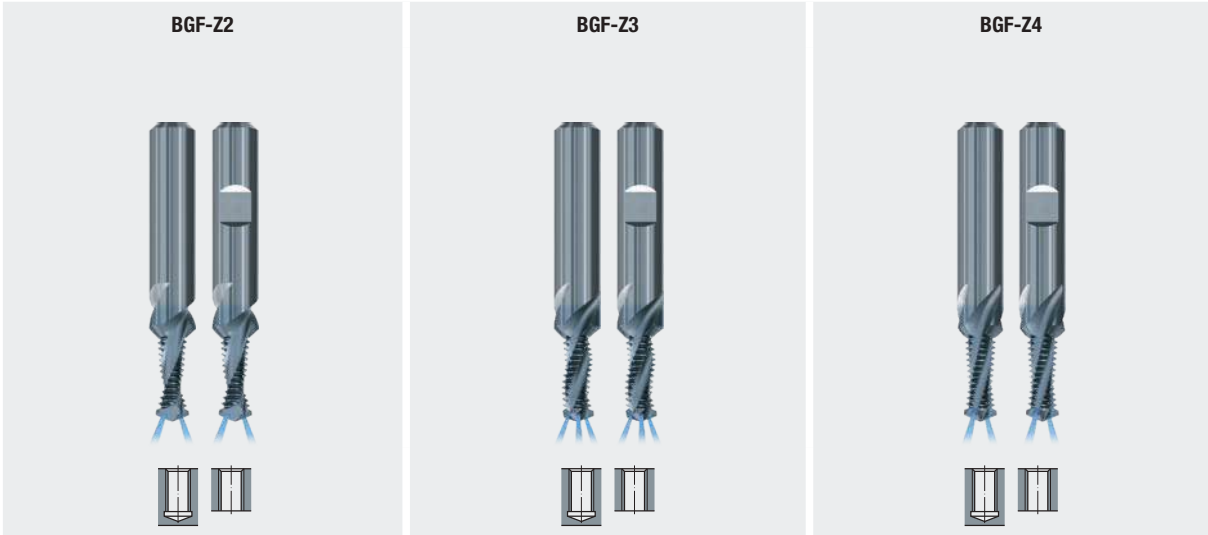


|  | ZGF                                                                               |                                                                                   |                                                                                   | ZGF-Z                  |               |      |                        |               |      |                     |               |       |                  |     |   |                        |
|--|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------|---------------|------|------------------------|---------------|------|---------------------|---------------|-------|------------------|-----|---|------------------------|
|  |  |  |  |                        |               |      |                        |               |      |                     |               |       |                  |     |   |                        |
|  | Unbeschichtet<br>Uncoated                                                         | TiCN                                                                              | TiCN                                                                              |                        |               |      |                        |               |      |                     |               |       |                  |     |   |                        |
|  | v <sub>c</sub> [m/min]                                                            |                                                                                   |                                                                                   | v <sub>c</sub> [m/min] |               |      | v <sub>c</sub> [m/min] |               |      | f <sub>z</sub> [mm] |               |       |                  |     |   |                        |
|  | min.                                                                              | empf.<br>rec.                                                                     | max.                                                                              | min.                   | empf.<br>rec. | max. | min.                   | empf.<br>rec. | max. | min.                | empf.<br>rec. | max.  |                  |     |   |                        |
|  | 63                                                                                | <b>90</b>                                                                         | 117                                                                               | 126                    | <b>180</b>    | 234  | 126                    | <b>180</b>    | 234  | 0,006               | <b>0,010</b>  | 0,014 | x d <sub>F</sub> | 1.1 | P | EG (STI)               |
|  | 53                                                                                | <b>75</b>                                                                         | 98                                                                                | 105                    | <b>150</b>    | 195  | 105                    | <b>150</b>    | 195  | 0,005               | <b>0,009</b>  | 0,013 | x d <sub>F</sub> | 2.1 |   | SELF-LOCK              |
|  | 42                                                                                | <b>60</b>                                                                         | 78                                                                                | 84                     | <b>120</b>    | 156  | 84                     | <b>120</b>    | 156  | 0,005               | <b>0,008</b>  | 0,011 | x d <sub>F</sub> | 3.1 |   | Tr                     |
|  | 35                                                                                | <b>50</b>                                                                         | 65                                                                                | 70                     | <b>100</b>    | 130  | 70                     | <b>100</b>    | 130  | 0,004               | <b>0,007</b>  | 0,010 | x d <sub>F</sub> | 4.1 |   | Zubehör<br>Accessories |
|  | 28                                                                                | <b>40</b>                                                                         | 52                                                                                | 56                     | <b>80</b>     | 104  | 56                     | <b>80</b>     | 104  | 0,004               | <b>0,006</b>  | 0,008 | x d <sub>F</sub> | 5.1 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 63                     | <b>90</b>     | 117  | 63                     | <b>90</b>     | 117  | 0,005               | <b>0,008</b>  | 0,011 | x d <sub>F</sub> | 1.1 | M | BGF                    |
|  |                                                                                   |                                                                                   |                                                                                   | 63                     | <b>90</b>     | 117  | 63                     | <b>90</b>     | 117  | 0,005               | <b>0,008</b>  | 0,011 | x d <sub>F</sub> | 1.2 |   | ZBGF                   |
|  |                                                                                   |                                                                                   |                                                                                   | 42                     | <b>60</b>     | 78   | 42                     | <b>60</b>     | 78   | 0,004               | <b>0,007</b>  | 0,010 | x d <sub>F</sub> | 3.1 |   | GSF                    |
|  |                                                                                   |                                                                                   |                                                                                   | 35                     | <b>50</b>     | 65   | 35                     | <b>50</b>     | 65   | 0,004               | <b>0,006</b>  | 0,008 | x d <sub>F</sub> | 4.1 |   |                        |
|  | 70                                                                                | <b>100</b>                                                                        | 130                                                                               | 112                    | <b>160</b>    | 208  | 112                    | <b>160</b>    | 208  | 0,005               | <b>0,009</b>  | 0,013 | x d <sub>F</sub> | 1.1 | K | GF                     |
|  | 70                                                                                | <b>100</b>                                                                        | 130                                                                               | 112                    | <b>160</b>    | 208  | 112                    | <b>160</b>    | 208  | 0,005               | <b>0,009</b>  | 0,013 | x d <sub>F</sub> | 1.2 |   | GF-VZ                  |
|  | 63                                                                                | <b>90</b>                                                                         | 117                                                                               | 105                    | <b>150</b>    | 195  | 105                    | <b>150</b>    | 195  | 0,005               | <b>0,009</b>  | 0,013 | x d <sub>F</sub> | 2.1 |   | GF-KEG                 |
|  | 63                                                                                | <b>90</b>                                                                         | 117                                                                               | 105                    | <b>150</b>    | 195  | 105                    | <b>150</b>    | 195  | 0,005               | <b>0,009</b>  | 0,013 | x d <sub>F</sub> | 2.2 |   |                        |
|  | 63                                                                                | <b>90</b>                                                                         | 117                                                                               | 105                    | <b>150</b>    | 195  | 105                    | <b>150</b>    | 195  | 0,005               | <b>0,009</b>  | 0,013 | x d <sub>F</sub> | 3.1 |   |                        |
|  | 63                                                                                | <b>90</b>                                                                         | 117                                                                               | 105                    | <b>150</b>    | 195  | 105                    | <b>150</b>    | 195  | 0,005               | <b>0,009</b>  | 0,013 | x d <sub>F</sub> | 3.2 |   |                        |
|  | 63                                                                                | <b>90</b>                                                                         | 117                                                                               | 105                    | <b>150</b>    | 195  | 105                    | <b>150</b>    | 195  | 0,005               | <b>0,009</b>  | 0,013 | x d <sub>F</sub> | 4.1 |   |                        |
|  | 63                                                                                | <b>90</b>                                                                         | 117                                                                               | 105                    | <b>150</b>    | 195  | 105                    | <b>150</b>    | 195  | 0,005               | <b>0,009</b>  | 0,013 | x d <sub>F</sub> | 4.2 |   |                        |
|  | 126                                                                               | <b>180</b>                                                                        | 234                                                                               | 196                    | <b>280</b>    | 364  | 196                    | <b>280</b>    | 364  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 1.1 | N | ZGF                    |
|  | 126                                                                               | <b>180</b>                                                                        | 234                                                                               | 196                    | <b>280</b>    | 364  | 196                    | <b>280</b>    | 364  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 1.2 |   | ZIRK-GF                |
|  | 126                                                                               | <b>180</b>                                                                        | 234                                                                               | 196                    | <b>280</b>    | 364  | 196                    | <b>280</b>    | 364  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 1.3 |   | Gigant                 |
|  | 126                                                                               | <b>180</b>                                                                        | 234                                                                               | 196                    | <b>280</b>    | 364  | 196                    | <b>280</b>    | 364  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 1.4 |   | MoSys                  |
|  | 126                                                                               | <b>180</b>                                                                        | 234                                                                               | 196                    | <b>280</b>    | 364  | 196                    | <b>280</b>    | 364  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 1.5 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 105                    | <b>150</b>    | 195  | 105                    | <b>150</b>    | 195  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 1.6 |   |                        |
|  | 126                                                                               | <b>180</b>                                                                        | 234                                                                               | 196                    | <b>280</b>    | 364  | 196                    | <b>280</b>    | 364  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 2.1 | N |                        |
|  | 126                                                                               | <b>180</b>                                                                        | 234                                                                               | 196                    | <b>280</b>    | 364  | 196                    | <b>280</b>    | 364  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 2.2 |   |                        |
|  | 126                                                                               | <b>180</b>                                                                        | 234                                                                               | 196                    | <b>280</b>    | 364  | 196                    | <b>280</b>    | 364  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 2.3 |   |                        |
|  | 77                                                                                | <b>110</b>                                                                        | 143                                                                               | 126                    | <b>180</b>    | 234  | 126                    | <b>180</b>    | 234  | 0,006               | <b>0,010</b>  | 0,014 | x d <sub>F</sub> | 2.4 |   |                        |
|  | 77                                                                                | <b>110</b>                                                                        | 143                                                                               | 126                    | <b>180</b>    | 234  | 126                    | <b>180</b>    | 234  | 0,006               | <b>0,010</b>  | 0,014 | x d <sub>F</sub> | 2.5 |   |                        |
|  | 105                                                                               | <b>150</b>                                                                        | 195                                                                               | 126                    | <b>180</b>    | 234  | 126                    | <b>180</b>    | 234  | 0,006               | <b>0,010</b>  | 0,014 | x d <sub>F</sub> | 2.6 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 42                     | <b>60</b>     | 78   | 42                     | <b>60</b>     | 78   | 0,005               | <b>0,008</b>  | 0,011 | x d <sub>F</sub> | 2.7 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 35                     | <b>50</b>     | 65   | 35                     | <b>50</b>     | 65   | 0,005               | <b>0,008</b>  | 0,011 | x d <sub>F</sub> | 2.8 |   |                        |
|  | 126                                                                               | <b>180</b>                                                                        | 234                                                                               | 196                    | <b>280</b>    | 364  | 196                    | <b>280</b>    | 364  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 3.1 |   |                        |
|  | 126                                                                               | <b>180</b>                                                                        | 234                                                                               | 196                    | <b>280</b>    | 364  | 196                    | <b>280</b>    | 364  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 3.2 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 196                    | <b>280</b>    | 364  | 196                    | <b>280</b>    | 364  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 4.1 |   |                        |
|  | 77                                                                                | <b>110</b>                                                                        | 143                                                                               | 196                    | <b>280</b>    | 364  | 196                    | <b>280</b>    | 364  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 4.2 |   |                        |
|  | 77                                                                                | <b>110</b>                                                                        | 143                                                                               | 196                    | <b>280</b>    | 364  | 196                    | <b>280</b>    | 364  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 4.3 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 105                    | <b>150</b>    | 195  | 105                    | <b>150</b>    | 195  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 4.4 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 105                    | <b>150</b>    | 195  | 105                    | <b>150</b>    | 195  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 4.4 |   |                        |
|  | 70                                                                                | <b>100</b>                                                                        | 130                                                                               | 105                    | <b>150</b>    | 195  | 105                    | <b>150</b>    | 195  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 5.1 |   |                        |
|  | 21                                                                                | <b>30</b>                                                                         | 39                                                                                | 35                     | <b>50</b>     | 65   | 35                     | <b>50</b>     | 65   | 0,004               | <b>0,007</b>  | 0,010 | x d <sub>F</sub> | 5.2 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 105                    | <b>150</b>    | 195  | 105                    | <b>150</b>    | 195  | 0,007               | <b>0,012</b>  | 0,017 | x d <sub>F</sub> | 5.3 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   |                        |               |      |                        |               |      |                     |               |       |                  |     | S |                        |
|  | 28                                                                                | <b>40</b>                                                                         | 52                                                                                | 42                     | <b>60</b>     | 78   | 42                     | <b>60</b>     | 78   | 0,004               | <b>0,006</b>  | 0,008 | x d <sub>F</sub> | 1.1 |   |                        |
|  | 28                                                                                | <b>40</b>                                                                         | 52                                                                                | 42                     | <b>60</b>     | 78   | 42                     | <b>60</b>     | 78   | 0,004               | <b>0,006</b>  | 0,008 | x d <sub>F</sub> | 1.2 |   |                        |
|  | 21                                                                                | <b>30</b>                                                                         | 39                                                                                | 35                     | <b>50</b>     | 65   | 35                     | <b>50</b>     | 65   | 0,002               | <b>0,004</b>  | 0,006 | x d <sub>F</sub> | 1.3 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   |                        |               |      |                        |               |      |                     |               |       |                  |     |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 32                     | <b>45</b>     | 59   | 32                     | <b>45</b>     | 59   | 0,002               | <b>0,004</b>  | 0,006 | x d <sub>F</sub> | 2.1 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 32                     | <b>45</b>     | 59   | 32                     | <b>45</b>     | 59   | 0,002               | <b>0,004</b>  | 0,006 | x d <sub>F</sub> | 2.2 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 21                     | <b>30</b>     | 39   | 21                     | <b>30</b>     | 39   | 0,002               | <b>0,004</b>  | 0,006 | x d <sub>F</sub> | 2.3 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 32                     | <b>45</b>     | 59   | 32                     | <b>45</b>     | 59   | 0,002               | <b>0,004</b>  | 0,006 | x d <sub>F</sub> | 2.4 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 21                     | <b>30</b>     | 39   | 21                     | <b>30</b>     | 39   | 0,002               | <b>0,004</b>  | 0,006 | x d <sub>F</sub> | 2.5 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 21                     | <b>30</b>     | 39   | 21                     | <b>30</b>     | 39   | 0,002               | <b>0,004</b>  | 0,006 | x d <sub>F</sub> | 2.6 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 32                     | <b>45</b>     | 59   | 32                     | <b>45</b>     | 59   | 0,002               | <b>0,004</b>  | 0,006 | x d <sub>F</sub> | 1.1 | H |                        |
|  |                                                                                   |                                                                                   |                                                                                   | 28                     | <b>40</b>     | 52   | 28                     | <b>40</b>     | 52   | 0,002               | <b>0,004</b>  | 0,006 | x d <sub>F</sub> | 1.2 |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   |                        |               |      |                        |               |      |                     |               |       | 1.3              |     |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   |                        |               |      |                        |               |      |                     |               |       | 1.4              |     |   |                        |
|  |                                                                                   |                                                                                   |                                                                                   |                        |               |      |                        |               |      |                     |               |       | 1.5              |     |   |                        |

| <div>Product Finder</div> <div><math>v_c / f_z</math></div> <div>M</div> <div>MF</div> <div>UNC<br/>UN, UNS</div> <div>UNF<br/>UNEF</div> <div>G, Rp</div> <div>NPT, NPTF<br/>Rc, W</div> <div>BSW, BSF</div> <div>Pg</div> <div>MJ<br/>UNJC, UNJF</div> <div>EG (STI)</div> <div>SELF-LOCK</div> <div>Tr</div> <div>Zubehör<br/>Accessories</div> <div>BGF</div> <div>ZBGF</div> <div>GSF</div> <div>GF</div> <div>GF-VZ</div> <div>GF-KEG</div> <div>ZGF</div> <div>ZIRK-GF</div> <div>Gigant</div> <div>MoSys</div> <div>  </div> | ZGF-S-CUT                                                                                      |                    |                          |                  | ZGF-HCUT                                                                                         |                 |                          |                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------|--------------------------|------------------|--------------------------------------------------------------------------------------------------|-----------------|--------------------------|------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <br>TIALN-T46 |                    |                          |                  | <br>TIALN-T46 |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | $v_c$ [m/min]                                                                                  |                    | $f_z$ [mm]               |                  | $v_c$ [m/min]                                                                                    |                 | $f_z$ [mm]               |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | min.                                                                                           | empf. rec. max.    | min.                     | empf. rec. max.  | min.                                                                                             | empf. rec. max. | min.                     | empf. rec. max.  |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1.1                                                                                            | 126 <b>180</b> 234 | 0,006 <b>0,010</b> 0,014 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.1                                                                                            | 105 <b>150</b> 195 | 0,005 <b>0,009</b> 0,013 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3.1                                                                                            | 84 <b>120</b> 156  | 0,005 <b>0,008</b> 0,011 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4.1                                                                                            | 70 <b>100</b> 130  | 0,004 <b>0,007</b> 0,010 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5.1                                                                                            | 56 <b>80</b> 104   | 0,004 <b>0,006</b> 0,008 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
| M                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1.1                                                                                            | 63 <b>90</b> 117   | 0,005 <b>0,008</b> 0,011 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.1                                                                                            | 63 <b>90</b> 117   | 0,005 <b>0,008</b> 0,011 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3.1                                                                                            | 42 <b>60</b> 78    | 0,004 <b>0,007</b> 0,010 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4.1                                                                                            | 35 <b>50</b> 65    | 0,004 <b>0,006</b> 0,008 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
| K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1.1                                                                                            | 112 <b>160</b> 208 | 0,005 <b>0,009</b> 0,013 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.2                                                                                            | 112 <b>160</b> 208 | 0,005 <b>0,009</b> 0,013 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.1                                                                                            | 105 <b>150</b> 195 | 0,005 <b>0,009</b> 0,013 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.2                                                                                            | 105 <b>150</b> 195 | 0,005 <b>0,009</b> 0,013 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3.1                                                                                            | 105 <b>150</b> 195 | 0,005 <b>0,009</b> 0,013 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3.2                                                                                            | 105 <b>150</b> 195 | 0,005 <b>0,009</b> 0,013 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4.1                                                                                            | 105 <b>150</b> 195 | 0,005 <b>0,009</b> 0,013 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4.2                                                                                            | 105 <b>150</b> 195 | 0,005 <b>0,009</b> 0,013 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
| N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1.1                                                                                            | 196 <b>280</b> 364 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.2                                                                                            | 196 <b>280</b> 364 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.3                                                                                            | 196 <b>280</b> 364 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.4                                                                                            | 196 <b>280</b> 364 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.5                                                                                            | 196 <b>280</b> 364 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.6                                                                                            | 105 <b>150</b> 195 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.1                                                                                            | 196 <b>280</b> 364 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.2                                                                                            | 196 <b>280</b> 364 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.3                                                                                            | 196 <b>280</b> 364 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.4                                                                                            | 126 <b>180</b> 234 | 0,006 <b>0,010</b> 0,014 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.5                                                                                            | 126 <b>180</b> 234 | 0,006 <b>0,010</b> 0,014 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.6                                                                                            | 126 <b>180</b> 234 | 0,006 <b>0,010</b> 0,014 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.7                                                                                            | 42 <b>60</b> 78    | 0,005 <b>0,008</b> 0,011 | x d <sub>F</sub> | 35 <b>50</b> 65                                                                                  |                 | 0,002 <b>0,004</b> 0,006 | x d <sub>F</sub> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.8                                                                                            | 35 <b>50</b> 65    | 0,005 <b>0,008</b> 0,011 | x d <sub>F</sub> | 35 <b>50</b> 65                                                                                  |                 | 0,002 <b>0,004</b> 0,006 | x d <sub>F</sub> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3.1                                                                                            | 196 <b>280</b> 364 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3.2                                                                                            | 196 <b>280</b> 364 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
| S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4.1                                                                                            | 196 <b>280</b> 364 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4.2                                                                                            | 196 <b>280</b> 364 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4.3                                                                                            | 105 <b>150</b> 195 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4.4                                                                                            | 105 <b>150</b> 195 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5.1                                                                                            | 105 <b>150</b> 195 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5.2                                                                                            | 35 <b>50</b> 65    | 0,004 <b>0,007</b> 0,010 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5.3                                                                                            | 105 <b>150</b> 195 | 0,007 <b>0,012</b> 0,017 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.1                                                                                            | 42 <b>60</b> 78    | 0,004 <b>0,006</b> 0,008 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.2                                                                                            | 42 <b>60</b> 78    | 0,004 <b>0,006</b> 0,008 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.3                                                                                            | 35 <b>50</b> 65    | 0,002 <b>0,004</b> 0,006 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.1                                                                                            | 32 <b>45</b> 59    | 0,002 <b>0,004</b> 0,006 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.2                                                                                            | 32 <b>45</b> 59    | 0,002 <b>0,004</b> 0,006 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
| H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2.3                                                                                            | 21 <b>30</b> 39    | 0,002 <b>0,004</b> 0,006 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.4                                                                                            | 32 <b>45</b> 59    | 0,002 <b>0,004</b> 0,006 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.5                                                                                            | 21 <b>30</b> 39    | 0,002 <b>0,004</b> 0,006 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.6                                                                                            | 21 <b>30</b> 39    | 0,002 <b>0,004</b> 0,006 | x d <sub>F</sub> |                                                                                                  |                 |                          |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.1                                                                                            | 32 <b>45</b> 59    | 0,002 <b>0,004</b> 0,006 | x d <sub>F</sub> | 42 <b>60</b> 78                                                                                  |                 | 0,004 <b>0,007</b> 0,010 | x d <sub>F</sub> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.2                                                                                            | 28 <b>40</b> 52    | 0,002 <b>0,004</b> 0,006 | x d <sub>F</sub> | 35 <b>50</b> 65                                                                                  |                 | 0,004 <b>0,006</b> 0,008 | x d <sub>F</sub> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.3                                                                                            |                    |                          |                  | 32 <b>45</b> 59                                                                                  |                 | 0,003 <b>0,005</b> 0,007 | x d <sub>F</sub> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.4                                                                                            |                    |                          |                  | 21 <b>30</b> 39                                                                                  |                 | 0,002 <b>0,004</b> 0,006 | x d <sub>F</sub> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.5                                                                                            |                    |                          |                  | 18 <b>25</b> 33                                                                                  |                 | 0,002 <b>0,003</b> 0,004 | x d <sub>F</sub> |

| ZIRK-GF (MZP)                                                                     |                          |  | ZIRK-GF (3ZP)                                                                    |                          |  | ZIRK-GF (SWP)                                                                       |                                                 |            | <div>Product Finder</div> <div><math>v_c / f_z</math></div> <div>M</div> <div>MF</div> <div>UNC<br/>UN, UNS</div> <div>UNF<br/>UNEF</div> <div>G, Rp</div> <div>NPT, NPTF<br/>Rc, W</div> <div>BSW, BSF</div> <div>Pg</div> <div>MJ<br/>UNJC, UNJF</div> <div>EG (STI)</div> <div>SELF-LOCK</div> <div>Tr</div> <div>Zubehör<br/>Accessories</div> <div>BGF</div> <div>ZBGF</div> <div>GSF</div> <div>GF</div> <div>GF-VZ</div> <div>GF-KEG</div> <div>ZGF</div> <div>ZIRK-GF</div> <div>Gigant</div> <div>MoSys</div> <div></div> |
|-----------------------------------------------------------------------------------|--------------------------|--|----------------------------------------------------------------------------------|--------------------------|--|-------------------------------------------------------------------------------------|-------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                          |  |  |                          |  |  |                                                 |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| TIALN-T4                                                                          |                          |  | TIALN-T4                                                                         |                          |  | ALCR-T42                                                                            |                                                 |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| $v_c$ [m/min]                                                                     | $f_z$ [mm]               |  | $v_c$ [m/min]                                                                    | $f_z$ [mm]               |  | $v_c$ [m/min]                                                                       | $f_z$ [mm]                                      |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| min. empf. max.<br>rec.                                                           | min. empf. max.<br>rec.  |  | min. empf. max.<br>rec.                                                          | min. empf. max.<br>rec.  |  | min. empf. max.<br>rec.                                                             | min. empf. max.<br>rec.                         |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 126 <b>180</b> 234                                                                | 0,066 <b>0,110</b> 0,165 |  | 126 <b>180</b> 234                                                               | 0,066 <b>0,110</b> 0,165 |  | 126 <b>180</b> 234                                                                  | 0,006 <b>0,010</b> 0,014 <b>x d<sub>F</sub></b> | <b>1.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 105 <b>150</b> 195                                                                | 0,060 <b>0,100</b> 0,150 |  | 105 <b>150</b> 195                                                               | 0,060 <b>0,100</b> 0,150 |  | 105 <b>150</b> 195                                                                  | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> | <b>2.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 84 <b>120</b> 156                                                                 | 0,054 <b>0,090</b> 0,135 |  | 84 <b>120</b> 156                                                                | 0,054 <b>0,090</b> 0,135 |  | 84 <b>120</b> 156                                                                   | 0,005 <b>0,008</b> 0,011 <b>x d<sub>F</sub></b> | <b>3.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 70 <b>100</b> 130                                                                 | 0,048 <b>0,080</b> 0,120 |  | 70 <b>100</b> 130                                                                | 0,048 <b>0,080</b> 0,120 |  | 70 <b>100</b> 130                                                                   | 0,004 <b>0,007</b> 0,010 <b>x d<sub>F</sub></b> | <b>4.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 56 <b>80</b> 104                                                                  | 0,042 <b>0,070</b> 0,105 |  | 56 <b>80</b> 104                                                                 | 0,042 <b>0,070</b> 0,105 |  | 56 <b>80</b> 104                                                                    | 0,004 <b>0,006</b> 0,008 <b>x d<sub>F</sub></b> | <b>5.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 63 <b>90</b> 117                                                                  | 0,048 <b>0,080</b> 0,120 |  | 63 <b>90</b> 117                                                                 | 0,048 <b>0,080</b> 0,120 |  | 63 <b>90</b> 117                                                                    | 0,005 <b>0,008</b> 0,011 <b>x d<sub>F</sub></b> | <b>1.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 63 <b>90</b> 117                                                                  | 0,048 <b>0,080</b> 0,120 |  | 63 <b>90</b> 117                                                                 | 0,048 <b>0,080</b> 0,120 |  | 63 <b>90</b> 117                                                                    | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> | <b>2.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 42 <b>60</b> 78                                                                   | 0,042 <b>0,070</b> 0,105 |  | 42 <b>60</b> 78                                                                  | 0,042 <b>0,070</b> 0,105 |  | 42 <b>60</b> 78                                                                     | 0,004 <b>0,007</b> 0,010 <b>x d<sub>F</sub></b> | <b>3.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 35 <b>50</b> 65                                                                   | 0,036 <b>0,060</b> 0,090 |  | 35 <b>50</b> 65                                                                  | 0,036 <b>0,060</b> 0,090 |  | 35 <b>50</b> 65                                                                     | 0,004 <b>0,006</b> 0,008 <b>x d<sub>F</sub></b> | <b>4.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 112 <b>160</b> 208                                                                | 0,060 <b>0,100</b> 0,150 |  | 112 <b>160</b> 208                                                               | 0,060 <b>0,100</b> 0,150 |  | 112 <b>160</b> 208                                                                  | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> | <b>1.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 112 <b>160</b> 208                                                                | 0,060 <b>0,100</b> 0,150 |  | 112 <b>160</b> 208                                                               | 0,060 <b>0,100</b> 0,150 |  | 112 <b>160</b> 208                                                                  | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> | <b>1.2</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 105 <b>150</b> 195                                                                | 0,060 <b>0,100</b> 0,150 |  | 105 <b>150</b> 195                                                               | 0,060 <b>0,100</b> 0,150 |  | 105 <b>150</b> 195                                                                  | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> | <b>2.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 105 <b>150</b> 195                                                                | 0,060 <b>0,100</b> 0,150 |  | 105 <b>150</b> 195                                                               | 0,060 <b>0,100</b> 0,150 |  | 105 <b>150</b> 195                                                                  | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> | <b>2.2</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 105 <b>150</b> 195                                                                | 0,060 <b>0,100</b> 0,150 |  | 105 <b>150</b> 195                                                               | 0,060 <b>0,100</b> 0,150 |  | 105 <b>150</b> 195                                                                  | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> | <b>3.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 105 <b>150</b> 195                                                                | 0,060 <b>0,100</b> 0,150 |  | 105 <b>150</b> 195                                                               | 0,060 <b>0,100</b> 0,150 |  | 105 <b>150</b> 195                                                                  | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> | <b>3.2</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 105 <b>150</b> 195                                                                | 0,060 <b>0,100</b> 0,150 |  | 105 <b>150</b> 195                                                               | 0,060 <b>0,100</b> 0,150 |  | 105 <b>150</b> 195                                                                  | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> | <b>4.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 105 <b>150</b> 195                                                                | 0,060 <b>0,100</b> 0,150 |  | 105 <b>150</b> 195                                                               | 0,060 <b>0,100</b> 0,150 |  | 105 <b>150</b> 195                                                                  | 0,005 <b>0,009</b> 0,013 <b>x d<sub>F</sub></b> | <b>4.2</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 196 <b>280</b> 364                                                                | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                               | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>1.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 196 <b>280</b> 364                                                                | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                               | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>1.2</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 196 <b>280</b> 364                                                                | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                               | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>1.3</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 196 <b>280</b> 364                                                                | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                               | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>1.4</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 196 <b>280</b> 364                                                                | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                               | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>1.5</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 105 <b>150</b> 195                                                                | 0,072 <b>0,120</b> 0,180 |  | 105 <b>150</b> 195                                                               | 0,072 <b>0,120</b> 0,180 |  | 105 <b>150</b> 195                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>1.6</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 196 <b>280</b> 364                                                                | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                               | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>2.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 196 <b>280</b> 364                                                                | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                               | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>2.2</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 196 <b>280</b> 364                                                                | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                               | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>2.3</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 126 <b>180</b> 234                                                                | 0,060 <b>0,100</b> 0,150 |  | 126 <b>180</b> 234                                                               | 0,060 <b>0,100</b> 0,150 |  | 126 <b>180</b> 234                                                                  | 0,006 <b>0,010</b> 0,014 <b>x d<sub>F</sub></b> | <b>2.4</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 126 <b>180</b> 234                                                                | 0,060 <b>0,100</b> 0,150 |  | 126 <b>180</b> 234                                                               | 0,060 <b>0,100</b> 0,150 |  | 126 <b>180</b> 234                                                                  | 0,006 <b>0,010</b> 0,014 <b>x d<sub>F</sub></b> | <b>2.5</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 126 <b>180</b> 234                                                                | 0,060 <b>0,100</b> 0,150 |  | 126 <b>180</b> 234                                                               | 0,060 <b>0,100</b> 0,150 |  | 126 <b>180</b> 234                                                                  | 0,006 <b>0,010</b> 0,014 <b>x d<sub>F</sub></b> | <b>2.6</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 42 <b>60</b> 78                                                                   | 0,048 <b>0,080</b> 0,120 |  | 42 <b>60</b> 78                                                                  | 0,048 <b>0,080</b> 0,120 |  | 42 <b>60</b> 78                                                                     | 0,005 <b>0,008</b> 0,011 <b>x d<sub>F</sub></b> | <b>2.7</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 35 <b>50</b> 65                                                                   | 0,048 <b>0,080</b> 0,120 |  | 35 <b>50</b> 65                                                                  | 0,048 <b>0,080</b> 0,120 |  | 35 <b>50</b> 65                                                                     | 0,005 <b>0,008</b> 0,011 <b>x d<sub>F</sub></b> | <b>2.8</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 196 <b>280</b> 364                                                                | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                               | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>3.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 196 <b>280</b> 364                                                                | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                               | 0,072 <b>0,120</b> 0,180 |  | 196 <b>280</b> 364                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>3.2</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 196 <b>280</b> 364                                                                | 0,078 <b>0,130</b> 0,195 |  | 196 <b>280</b> 364                                                               | 0,078 <b>0,130</b> 0,195 |  | 196 <b>280</b> 364                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>4.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 196 <b>280</b> 364                                                                | 0,078 <b>0,130</b> 0,195 |  | 196 <b>280</b> 364                                                               | 0,078 <b>0,130</b> 0,195 |  | 196 <b>280</b> 364                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>4.2</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 105 <b>150</b> 195                                                                | 0,078 <b>0,130</b> 0,195 |  | 105 <b>150</b> 195                                                               | 0,078 <b>0,130</b> 0,195 |  | 105 <b>150</b> 195                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>4.3</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 105 <b>150</b> 195                                                                | 0,078 <b>0,130</b> 0,195 |  | 105 <b>150</b> 195                                                               | 0,078 <b>0,130</b> 0,195 |  | 105 <b>150</b> 195                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>4.4</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 105 <b>150</b> 195                                                                | 0,078 <b>0,130</b> 0,195 |  | 105 <b>150</b> 195                                                               | 0,078 <b>0,130</b> 0,195 |  | 105 <b>150</b> 195                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>5.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 35 <b>50</b> 65                                                                   | 0,036 <b>0,060</b> 0,090 |  | 35 <b>50</b> 65                                                                  | 0,036 <b>0,060</b> 0,090 |  | 35 <b>50</b> 65                                                                     | 0,004 <b>0,007</b> 0,010 <b>x d<sub>F</sub></b> | <b>5.2</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 105 <b>150</b> 195                                                                | 0,078 <b>0,130</b> 0,195 |  | 105 <b>150</b> 195                                                               | 0,078 <b>0,130</b> 0,195 |  | 105 <b>150</b> 195                                                                  | 0,007 <b>0,012</b> 0,017 <b>x d<sub>F</sub></b> | <b>5.3</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 42 <b>60</b> 78                                                                   | 0,036 <b>0,060</b> 0,090 |  | 42 <b>60</b> 78                                                                  | 0,036 <b>0,060</b> 0,090 |  | 42 <b>60</b> 78                                                                     | 0,004 <b>0,006</b> 0,008 <b>x d<sub>F</sub></b> | <b>1.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 42 <b>60</b> 78                                                                   | 0,036 <b>0,060</b> 0,090 |  | 42 <b>60</b> 78                                                                  | 0,036 <b>0,060</b> 0,090 |  | 42 <b>60</b> 78                                                                     | 0,004 <b>0,006</b> 0,008 <b>x d<sub>F</sub></b> | <b>1.2</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 35 <b>50</b> 65                                                                   | 0,030 <b>0,050</b> 0,075 |  | 35 <b>50</b> 65                                                                  | 0,030 <b>0,050</b> 0,075 |  | 35 <b>50</b> 65                                                                     | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> | <b>1.3</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 32 <b>45</b> 59                                                                   | 0,030 <b>0,050</b> 0,075 |  | 32 <b>45</b> 59                                                                  | 0,030 <b>0,050</b> 0,075 |  | 32 <b>45</b> 59                                                                     | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> | <b>2.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 32 <b>45</b> 59                                                                   | 0,030 <b>0,050</b> 0,075 |  | 32 <b>45</b> 59                                                                  | 0,030 <b>0,050</b> 0,075 |  | 32 <b>45</b> 59                                                                     | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> | <b>2.2</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 21 <b>30</b> 39                                                                   | 0,030 <b>0,050</b> 0,075 |  | 21 <b>30</b> 39                                                                  | 0,030 <b>0,050</b> 0,075 |  | 21 <b>30</b> 39                                                                     | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> | <b>2.3</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 32 <b>45</b> 59                                                                   | 0,030 <b>0,050</b> 0,075 |  | 32 <b>45</b> 59                                                                  | 0,030 <b>0,050</b> 0,075 |  | 32 <b>45</b> 59                                                                     | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> | <b>2.4</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 21 <b>30</b> 39                                                                   | 0,030 <b>0,050</b> 0,075 |  | 21 <b>30</b> 39                                                                  | 0,030 <b>0,050</b> 0,075 |  | 21 <b>30</b> 39                                                                     | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> | <b>2.5</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 21 <b>30</b> 39                                                                   | 0,030 <b>0,050</b> 0,075 |  | 21 <b>30</b> 39                                                                  | 0,030 <b>0,050</b> 0,075 |  | 21 <b>30</b> 39                                                                     | 0,002 <b>0,004</b> 0,006 <b>x d<sub>F</sub></b> | <b>2.6</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 32 <b>45</b> 59                                                                   | 0,030 <b>0,050</b> 0,075 |  | 32 <b>45</b> 59                                                                  | 0,030 <b>0,050</b> 0,075 |  |                                                                                     |                                                 | <b>1.1</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 28 <b>40</b> 52                                                                   | 0,030 <b>0,050</b> 0,075 |  | 28 <b>40</b> 52                                                                  | 0,030 <b>0,050</b> 0,075 |  |                                                                                     |                                                 | <b>1.2</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                   |                          |  |                                                                                  |                          |  |                                                                                     |                                                 | <b>1.3</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                   |                          |  |                                                                                  |                          |  |                                                                                     |                                                 | <b>1.4</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                   |                          |  |                                                                                  |                          |  |                                                                                     |                                                 | <b>1.5</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |





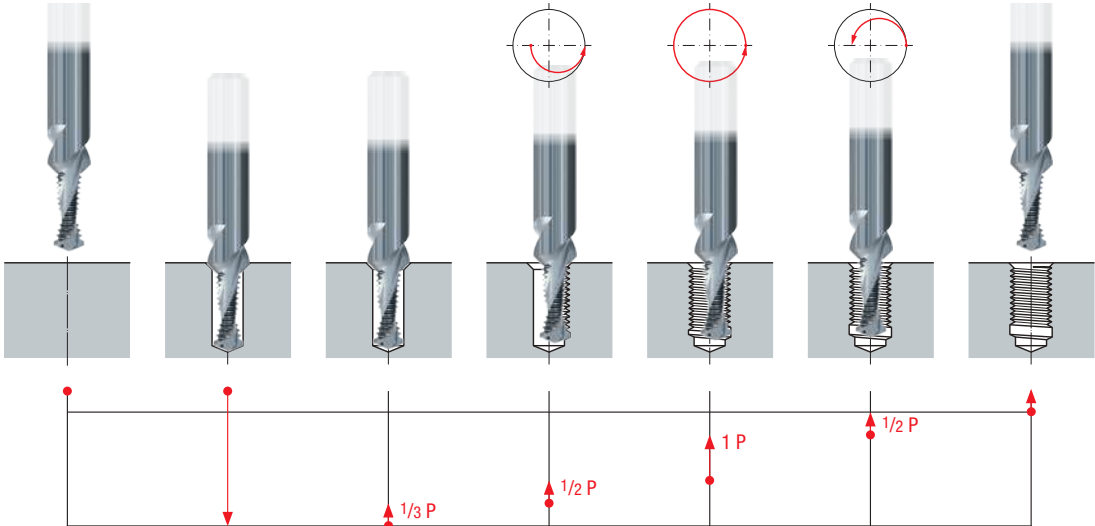
|           |           |           |
|-----------|-----------|-----------|
| 370 - 371 | 372 - 373 | 374 - 375 |
| 376 - 377 |           | 378 - 379 |
| 380 - 381 |           |           |
| 382 - 383 |           |           |
| 384 - 385 |           |           |
| 386 - 387 |           |           |

Mögliche Modifikationen siehe Seite 356 - 357  
Possible modifications, see pages 356 - 357

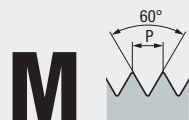
| Product Finder         |
|------------------------|
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

|         |
|---------|
| BGF     |
| ZBGF    |
| GSF     |
| GF      |
| GF-VZ   |
| GF-KEG  |
| ZGF     |
| ZIRK-GF |
| Gigant  |
| MoSys   |

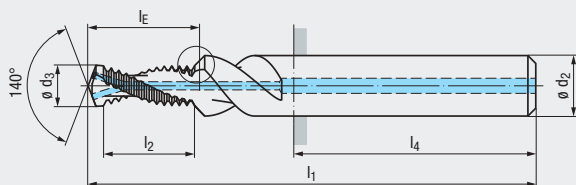
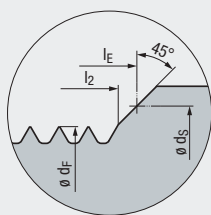
Gewindefräszyklus · Thread milling cycle



|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |



DIN 13



VHM  
Carbide

R30

RH + LH

Z2

DIN 6535

HA  
HB



BGF-Z2



Einsatzgebiete – Material  
Applications – material

» 358

K 1.1-3.2 N 1.1-1.5  
N 2.2-2.3, 2.6 N 3.1-4.1

Gewindetiefe  
Thread depth

1,5 x d<sub>1</sub>

|          | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) | BGF-Z2<br>1,5xd <sub>1</sub><br>R30-IKZ-HA | BGF-Z2<br>1,5xd <sub>1</sub><br>R30-IKZ-HB |
|----------|------------------------|---------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|--------------------------------------------|--------------------------------------------|
| <b>M</b> | 4                      | 0,7     | 3,16                   | 6                | 3,3              | 4,2              | 49             | 5,6            | 36             | 7,4            | 2             | GF422801.0040                              | GF422201.0040                              |
|          | 5                      | 0,8     | 4,04                   | 6                | 4,2              | 5,3              | 55             | 7,2            | 36             | 9,4            | 2             | GF422801.0050                              | GF422201.0050                              |
|          | 6                      | 1       | 4,8                    | 8                | 5                | 6,3              | 62             | 9,1            | 36             | 11,7           | 2             | GF422801.0060                              | GF422201.0060                              |
|          | 8                      | 1,25    | 6,5                    | 10               | 6,75             | 8,4              | 74             | 11,3           | 40             | 14,7           | 2             | GF422801.0080                              | GF422201.0080                              |
|          | 10                     | 1,5     | 8,2                    | 12               | 8,5              | 10,5             | 79             | 15,1           | 45             | 19,3           | 2             | GF422801.0100                              | GF422201.0100                              |
|          | 12                     | 1,75    | 9,9                    | 14               | 10,25            | 12,6             | 89             | 17,6           | 45             | 22,5           | 2             | GF422801.0112                              | GF422201.0112                              |
|          | 14                     | 2       | 11,6                   | 16               | 12               | 14,7             | 102            | 20,1           | 48             | 25,8           | 2             | GF422801.0114                              | GF422201.0114                              |
|          | 16                     | 2       | 13,6                   | 18               | 14               | 16,8             | 102            | 24,1           | 48             | 30,3           | 2             | GF422801.0116                              | GF422201.0116                              |

Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

|          | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) | BGF-Z2<br>2xd <sub>1</sub><br>R30-IKZ-HA | BGF-Z2<br>2xd <sub>1</sub><br>R30-IKZ-HB |
|----------|------------------------|---------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|------------------------------------------|------------------------------------------|
| <b>M</b> | 4                      | 0,7     | 3,16                   | 6                | 3,3              | 4,2              | 49             | 7,7            | 36             | 9,5            | 2             | GF432801.0040                            | GF432201.0040                            |
|          | 5                      | 0,8     | 4,04                   | 6                | 4,2              | 5,3              | 55             | 9,6            | 36             | 11,8           | 2             | GF432801.0050                            | GF432201.0050                            |
|          | 6                      | 1       | 4,8                    | 8                | 5                | 6,3              | 62             | 12,1           | 36             | 14,7           | 2             | GF432801.0060                            | GF432201.0060                            |
|          | 8                      | 1,25    | 6,5                    | 10               | 6,75             | 8,4              | 74             | 15,1           | 40             | 18,5           | 2             | GF432801.0080                            | GF432201.0080                            |
|          | 10                     | 1,5     | 8,2                    | 12               | 8,5              | 10,5             | 79             | 19,6           | 45             | 23,8           | 2             | GF432801.0100                            | GF432201.0100                            |
|          | 12                     | 1,75    | 9,9                    | 14               | 10,25            | 12,6             | 89             | 22,9           | 45             | 27,8           | 2             | GF432801.0112                            | GF432201.0112                            |
|          | 14                     | 2       | 11,6                   | 16               | 12               | 14,7             | 102            | 28,1           | 48             | 33,8           | 2             | GF432801.0114                            | GF432201.0114                            |
|          | 16                     | 2       | 13,6                   | 18               | 14               | 16,8             | 102            | 32,1           | 48             | 38,3           | 2             | GF432801.0116                            | GF432201.0116                            |

Gewindetiefe  
Thread depth

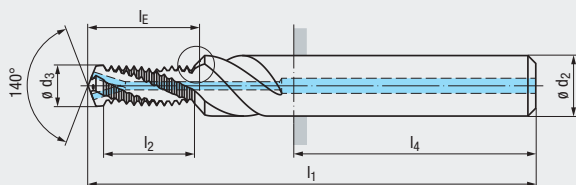
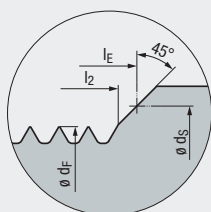
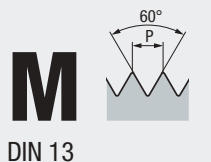
2,5 x d<sub>1</sub>

|          | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) | BGF-Z2<br>2,5xd <sub>1</sub><br>R30-IKZ-HA | BGF-Z2<br>2,5xd <sub>1</sub><br>R30-IKZ-HB |
|----------|------------------------|---------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|--------------------------------------------|--------------------------------------------|
| <b>M</b> | 6                      | 1       | 4,8                    | 8                | 5                | 6,3              | 65             | 15,1           | 36             | 17,7           | 2             | GF442801.0060                              | GF442201.0060                              |
|          | 8                      | 1,25    | 6,5                    | 10               | 6,75             | 8,4              | 80             | 20,1           | 40             | 23,5           | 2             | GF442801.0080                              | GF442201.0080                              |
|          | 10                     | 1,5     | 8,2                    | 12               | 8,5              | 10,5             | 85             | 25,6           | 45             | 29,8           | 2             | GF442801.0100                              | GF442201.0100                              |
|          | 12                     | 1,75    | 9,9                    | 14               | 10,25            | 12,6             | 95             | 29,9           | 45             | 34,8           | 2             | GF442801.0112                              | GF442201.0112                              |

Weitere Ausführungen auf Anfrage  
Further designs upon request



- Product Finder
- $v_c / f_z$
- M
- MF
- UNC  
UN, UNS
- UNF  
UNEF
- G, Rp
- NPT, NPTF  
Rc, W
- BSW, BSF
- Pg
- MJ  
UNJC, UNJF
- EG (STI)
- SELF-LOCK
- Tr
- Zubehör  
Accessories



VHM  
Carbide

R30

RH + LH

Z3

DIN 6535

HA  
HB



BGF-Z3



Einsatzgebiete – Material  
Applications – material

» 358

K 1.1-1.2

N 1.5, 2.3

Gewindetiefe  
Thread depth

1,5 x d<sub>1</sub>

|          | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) |
|----------|------------------------|---------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|
| <b>M</b> | 6                      | 1       | 4,8                    | 8                | 5                | 6,3              | 62             | 9,1            | 36             | 11,7           | 3             |
|          | 8                      | 1,25    | 6,5                    | 10               | 6,75             | 8,4              | 74             | 11,3           | 40             | 14,7           | 3             |
|          | 10                     | 1,5     | 8,2                    | 12               | 8,5              | 10,5             | 79             | 15,1           | 45             | 19,3           | 3             |
|          | 12                     | 1,75    | 9,9                    | 14               | 10,25            | 12,6             | 89             | 17,6           | 45             | 22,5           | 3             |
|          | 16                     | 2       | 13,6                   | 18               | 14               | 16,8             | 102            | 24,1           | 48             | 30,3           | 3             |

BGF-Z3  
1,5xd<sub>1</sub>  
R30-IKZ-HA

BGF-Z3  
1,5xd<sub>1</sub>  
R30-IKZ-HB

GF422851.0060  
GF422851.0080  
GF422851.0100  
GF422851.0112  
GF422851.0116

GF422251.0060  
GF422251.0080  
GF422251.0100  
GF422251.0112  
GF422251.0116

Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

|          | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) |
|----------|------------------------|---------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|
| <b>M</b> | 6                      | 1       | 4,8                    | 8                | 5                | 6,3              | 62             | 12,1           | 36             | 14,7           | 3             |
|          | 8                      | 1,25    | 6,5                    | 10               | 6,75             | 8,4              | 74             | 15,1           | 40             | 18,5           | 3             |
|          | 10                     | 1,5     | 8,2                    | 12               | 8,5              | 10,5             | 79             | 19,6           | 45             | 23,8           | 3             |
|          | 12                     | 1,75    | 9,9                    | 14               | 10,25            | 12,6             | 89             | 22,9           | 45             | 27,8           | 3             |
|          | 16                     | 2       | 13,6                   | 18               | 14               | 16,8             | 102            | 32,1           | 48             | 38,3           | 3             |

BGF-Z3  
2xd<sub>1</sub>  
R30-IKZ-HA

BGF-Z3  
2xd<sub>1</sub>  
R30-IKZ-HB

GF432851.0060  
GF432851.0080  
GF432851.0100  
GF432851.0112  
GF432851.0116

GF432251.0060  
GF432251.0080  
GF432251.0100  
GF432251.0112  
GF432251.0116

Gewindetiefe  
Thread depth

2,5 x d<sub>1</sub>

|          | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) |
|----------|------------------------|---------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|
| <b>M</b> | 6                      | 1       | 4,8                    | 8                | 5                | 6,3              | 65             | 15,1           | 36             | 17,7           | 3             |
|          | 8                      | 1,25    | 6,5                    | 10               | 6,75             | 8,4              | 80             | 20,1           | 40             | 23,5           | 3             |
|          | 10                     | 1,5     | 8,2                    | 12               | 8,5              | 10,5             | 85             | 25,6           | 45             | 29,8           | 3             |
|          | 12                     | 1,75    | 9,9                    | 14               | 10,25            | 12,6             | 95             | 29,9           | 45             | 34,8           | 3             |
|          | 16                     | 2       | 13,6                   | 18               | 14               | 16,8             | 110            | 40,1           | 48             | 46,3           | 3             |

BGF-Z3  
2,5xd<sub>1</sub>  
R30-IKZ-HA

BGF-Z3  
2,5xd<sub>1</sub>  
R30-IKZ-HB

GF442851.0060  
GF442851.0080  
GF442851.0100  
GF442851.0112  
GF442851.0116

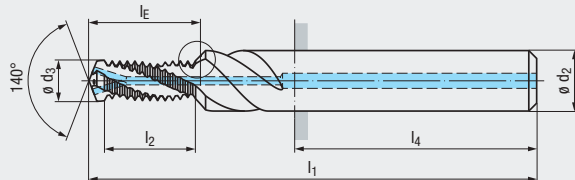
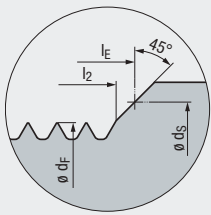
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GF442251.0080  
GF442251.0100  
GF442251.0112  
GF442251.0116

Weitere Ausführungen auf Anfrage  
Further designs upon request



**M**

DIN 13

**VHM  
Carbide****TICN****R30****RH + LH****Z3****DIN 6535**HA  
HB**BGF-Z3**Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

|          | $\varnothing d_1$<br>mm | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_5$ | $l_1$ | $l_2$ | $l_4$ | $l_E$ | Z<br>(Flutes) |
|----------|-------------------------|---------|-------------------------|-------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|
| <b>M</b> | 6                       | 1       | 4,8                     | 8                 | 5                 | 6,3               | 62    | 9,1   | 36    | 11,7  | 3             |
|          | 8                       | 1,25    | 6,5                     | 10                | 6,75              | 8,4               | 74    | 11,3  | 40    | 14,7  | 3             |
|          | 10                      | 1,5     | 8,2                     | 12                | 8,5               | 10,5              | 79    | 15,1  | 45    | 19,3  | 3             |
|          | 12                      | 1,75    | 9,9                     | 14                | 10,25             | 12,6              | 89    | 17,6  | 45    | 22,5  | 3             |
|          | 16                      | 2       | 13,6                    | 18                | 14                | 16,8              | 102   | 24,1  | 48    | 30,3  | 3             |

**K** 1.1-1.2**N** 1.5-1.6, 2,3**1,5 x d<sub>1</sub>****BGF-Z3  
1,5xd<sub>1</sub>  
R30-1KZ-HA  
TICN****BGF-Z3  
1,5xd<sub>1</sub>  
R30-1KZ-HB  
TICN**GF422856.0060  
GF422856.0080  
GF422856.0100  
GF422856.0112  
GF422856.0116GF432256.0060  
GF432256.0080  
GF432256.0100  
GF432256.0112  
GF432256.0116Gewindetiefe  
Thread depth

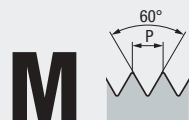
|          | $\varnothing d_1$<br>mm | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_5$ | $l_1$ | $l_2$ | $l_4$ | $l_E$ | Z<br>(Flutes) |
|----------|-------------------------|---------|-------------------------|-------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|
| <b>M</b> | 6                       | 1       | 4,8                     | 8                 | 5                 | 6,3               | 62    | 12,1  | 36    | 14,7  | 3             |
|          | 8                       | 1,25    | 6,5                     | 10                | 6,75              | 8,4               | 74    | 15,1  | 40    | 18,5  | 3             |
|          | 10                      | 1,5     | 8,2                     | 12                | 8,5               | 10,5              | 79    | 19,6  | 45    | 23,8  | 3             |
|          | 12                      | 1,75    | 9,9                     | 14                | 10,25             | 12,6              | 89    | 22,9  | 45    | 27,8  | 3             |
|          | 16                      | 2       | 13,6                    | 18                | 14                | 16,8              | 102   | 32,1  | 48    | 38,3  | 3             |

**2 x d<sub>1</sub>****BGF-Z3  
2xd<sub>1</sub>  
R30-1KZ-HA  
TICN****BGF-Z3  
2xd<sub>1</sub>  
R30-1KZ-HB  
TICN**GF432856.0060  
GF432856.0080  
GF432856.0100  
GF432856.0112  
GF432856.0116GF432256.0060  
GF432256.0080  
GF432256.0100  
GF432256.0112  
GF432256.0116Gewindetiefe  
Thread depth

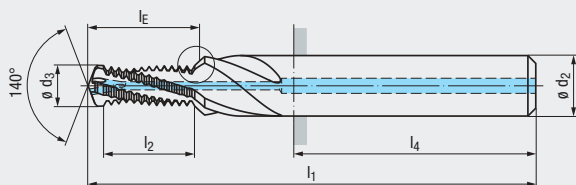
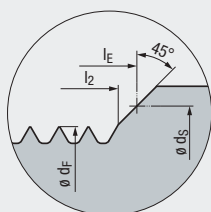
|          | $\varnothing d_1$<br>mm | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_5$ | $l_1$ | $l_2$ | $l_4$ | $l_E$ | Z<br>(Flutes) |
|----------|-------------------------|---------|-------------------------|-------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|
| <b>M</b> | 6                       | 1       | 4,8                     | 8                 | 5                 | 6,3               | 65    | 15,1  | 36    | 17,7  | 3             |
|          | 8                       | 1,25    | 6,5                     | 10                | 6,75              | 8,4               | 80    | 20,1  | 40    | 23,5  | 3             |
|          | 10                      | 1,5     | 8,2                     | 12                | 8,5               | 10,5              | 85    | 25,6  | 45    | 29,8  | 3             |
|          | 12                      | 1,75    | 9,9                     | 14                | 10,25             | 12,6              | 95    | 29,9  | 45    | 34,8  | 3             |
|          | 16                      | 2       | 13,6                    | 18                | 14                | 16,8              | 110   | 40,1  | 48    | 46,3  | 3             |

**2,5 x d<sub>1</sub>****BGF-Z3  
2,5xd<sub>1</sub>  
R30-1KZ-HA  
TICN****BGF-Z3  
2,5xd<sub>1</sub>  
R30-1KZ-HB  
TICN**GF442856.0060  
GF442856.0080  
GF442856.0100  
GF442856.0112  
GF442856.0116GF442256.0060  
GF442256.0080  
GF442256.0100  
GF442256.0112  
GF442256.0116Weitere Ausführungen auf Anfrage  
Further designs upon request

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |



DIN 13



VHM  
Carbide

TICN

R20

RH + LH

Z4

DIN 6535

HA

HB



BGF-Z4



Einsatzgebiete – Material  
Applications – material

» 358

K 1.1-1.2

N 1.5-1.6, 2.3

Gewindetiefe  
Thread depth

1,5 x d<sub>1</sub>

|          | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) |
|----------|------------------------|---------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|
| <b>M</b> | 6                      | 1       | 4,8                    | 8                | 5                | 6,3              | 62             | 9,1            | 36             | 11,7           | 4             |
|          | 8                      | 1,25    | 6,5                    | 10               | 6,75             | 8,4              | 74             | 11,3           | 40             | 14,7           | 4             |
|          | 10                     | 1,5     | 8,2                    | 12               | 8,5              | 10,5             | 79             | 15,1           | 45             | 19,3           | 4             |
|          | 12                     | 1,75    | 9,9                    | 14               | 10,25            | 12,6             | 89             | 17,6           | 45             | 22,5           | 4             |



Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

|          | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) |
|----------|------------------------|---------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|
| <b>M</b> | 6                      | 1       | 4,8                    | 8                | 5                | 6,3              | 62             | 12,1           | 36             | 14,7           | 4             |
|          | 8                      | 1,25    | 6,5                    | 10               | 6,75             | 8,4              | 74             | 15,1           | 40             | 18,5           | 4             |
|          | 10                     | 1,5     | 8,2                    | 12               | 8,5              | 10,5             | 79             | 19,6           | 45             | 23,8           | 4             |
|          | 12                     | 1,75    | 9,9                    | 14               | 10,25            | 12,6             | 89             | 22,9           | 45             | 27,8           | 4             |
|          | 16                     | 2       | 13,6                   | 18               | 14               | 16,8             | 102            | 32,1           | 48             | 38,3           | 4             |



Gewindetiefe  
Thread depth

2,5 x d<sub>1</sub>

|          | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) |
|----------|------------------------|---------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|
| <b>M</b> | 6                      | 1       | 4,8                    | 8                | 5                | 6,3              | 65             | 15,1           | 36             | 17,7           | 4             |
|          | 8                      | 1,25    | 6,5                    | 10               | 6,75             | 8,4              | 80             | 20,1           | 40             | 23,5           | 4             |
|          | 10                     | 1,5     | 8,2                    | 12               | 8,5              | 10,5             | 85             | 25,6           | 45             | 29,8           | 4             |
|          | 12                     | 1,75    | 9,9                    | 14               | 10,25            | 12,6             | 95             | 29,9           | 45             | 34,8           | 4             |
|          | 16                     | 2       | 13,6                   | 18               | 14               | 16,8             | 110            | 40,1           | 48             | 46,3           | 4             |



BGF-Z4  
2,5xd<sub>1</sub>  
R20-IKZ-HA  
TICN

GF449846.0060  
GF449846.0080  
GF449846.0100  
GF449846.0112  
GF449846.0116

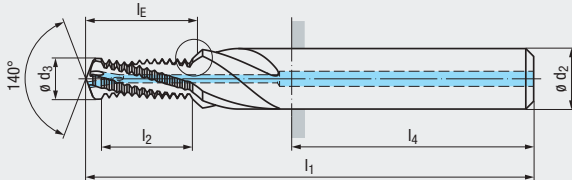
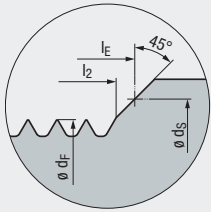
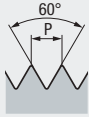
BGF-Z4  
2,5xd<sub>1</sub>  
R20-IKZ-HB  
TICN

GF449246.0060  
GF449246.0080  
GF449246.0100  
GF449246.0112  
GF449246.0116

Weitere Ausführungen auf Anfrage  
Further designs upon request

**M**

DIN 13

**VHM**  
Carbide**TIALN**  
T3**R20****RH + LH****Z4****DIN 6535****BGF-Z4**Einsatzgebiete – Material  
Applications – material

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Gewindetiefe  
Thread depth

|          | $\varnothing d_1$<br>mm | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_E$ | Z<br>(Flutes) |
|----------|-------------------------|---------|-------------------------|-------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|
| <b>M</b> | 6                       | 1       | 4,8                     | 8                 | 5                 | 6,3               | 62    | 9,1   | 36    | 11,7  | 4             |
|          | 8                       | 1,25    | 6,5                     | 10                | 6,75              | 8,4               | 74    | 11,3  | 40    | 14,7  | 4             |
|          | 10                      | 1,5     | 8,2                     | 12                | 8,5               | 10,5              | 79    | 15,1  | 45    | 19,3  | 4             |
|          | 12                      | 1,75    | 9,9                     | 14                | 10,25             | 12,6              | 89    | 17,6  | 45    | 22,5  | 4             |

**K** 1.1-1.2**N** 1.5-1.6, 2.3**1,5 x d<sub>1</sub>****BGF-Z4**  
1,5xd<sub>1</sub>  
R20-IKZ-HA  
TIALN-T3**BGF-Z4**  
1,5xd<sub>1</sub>  
R20-IKZ-HB  
TIALN-T3GF429848.0060  
GF429848.0080  
GF429848.0100  
GF429848.0112GF429248.0060  
GF429248.0080  
GF429248.0100  
GF429248.0112Gewindetiefe  
Thread depth

|          | $\varnothing d_1$<br>mm | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_E$ | Z<br>(Flutes) |
|----------|-------------------------|---------|-------------------------|-------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|
| <b>M</b> | 6                       | 1       | 4,8                     | 8                 | 5                 | 6,3               | 62    | 12,1  | 36    | 14,7  | 4             |
|          | 8                       | 1,25    | 6,5                     | 10                | 6,75              | 8,4               | 74    | 15,1  | 40    | 18,5  | 4             |
|          | 10                      | 1,5     | 8,2                     | 12                | 8,5               | 10,5              | 79    | 19,6  | 45    | 23,8  | 4             |
|          | 12                      | 1,75    | 9,9                     | 14                | 10,25             | 12,6              | 89    | 22,9  | 45    | 27,8  | 4             |
|          | 16                      | 2       | 13,6                    | 18                | 14                | 16,8              | 102   | 32,1  | 48    | 38,3  | 4             |

**2 x d<sub>1</sub>****BGF-Z4**  
2xd<sub>1</sub>  
R20-IKZ-HA  
TIALN-T3**BGF-Z4**  
2xd<sub>1</sub>  
R20-IKZ-HB  
TIALN-T3GF439848.0060  
GF439848.0080  
GF439848.0100  
GF439848.0112  
GF439848.0116GF439248.0060  
GF439248.0080  
GF439248.0100  
GF439248.0112  
GF439248.0116Gewindetiefe  
Thread depth

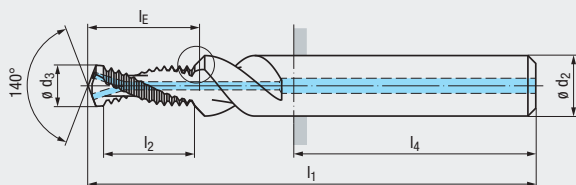
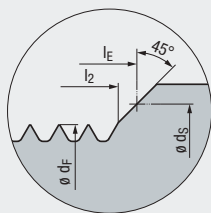
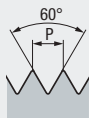
|          | $\varnothing d_1$<br>mm | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_E$ | Z<br>(Flutes) |
|----------|-------------------------|---------|-------------------------|-------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|
| <b>M</b> | 6                       | 1       | 4,8                     | 8                 | 5                 | 6,3               | 65    | 15,1  | 36    | 17,7  | 4             |
|          | 8                       | 1,25    | 6,5                     | 10                | 6,75              | 8,4               | 80    | 20,1  | 40    | 23,5  | 4             |
|          | 10                      | 1,5     | 8,2                     | 12                | 8,5               | 10,5              | 85    | 25,6  | 45    | 29,8  | 4             |
|          | 12                      | 1,75    | 9,9                     | 14                | 10,25             | 12,6              | 95    | 29,9  | 45    | 34,8  | 4             |
|          | 16                      | 2       | 13,6                    | 18                | 14                | 16,8              | 110   | 40,1  | 48    | 46,3  | 4             |

**2,5 x d<sub>1</sub>****BGF-Z4**  
2,5xd<sub>1</sub>  
R20-IKZ-HA  
TIALN-T3**BGF-Z4**  
2,5xd<sub>1</sub>  
R20-IKZ-HB  
TIALN-T3GF449848.0060  
GF449848.0080  
GF449848.0100  
GF449848.0112  
GF449848.0116GF449248.0060  
GF449248.0080  
GF449248.0100  
GF449248.0112  
GF449248.0116Weitere Ausführungen auf Anfrage  
Further designs upon request

- Product Finder
- $v_c / f_z$
- M
- MF
- UNC  
UN, UNS
- UNF  
UNEF
- G, Rp
- NPT, NPTF  
Rc, W
- BSW, BSF
- Pg
- MJ  
UNJC, UNJF
- EG (STI)
- SELF-LOCK
- Tr
- Zubehör  
Accessories

# MF

DIN 13



VHM  
Carbide

R30

RH + LH

Z2



DIN 6535



BGF-Z2



Einsatzgebiete – Material  
Applications – material

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K 1.1-3.2 N 1.1-1.5  
N 2.2-2.3, 2.6 N 3.1-4.1

Gewindetiefe  
Thread depth

1,5 x d<sub>1</sub>

|      | $\varnothing d_1$<br>mm |   | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_E$ | Z<br>(Flutes) | BGF-Z2<br>1,5xd <sub>1</sub><br>R30-1KZ-HA | BGF-Z2<br>1,5xd <sub>1</sub><br>R30-1KZ-HB |
|------|-------------------------|---|---------|-------------------------|-------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|--------------------------------------------|--------------------------------------------|
| BGF  | 6                       | x | 0,75    | 5,05                    | 8                 | 5,25              | 6,3               | 62    | 9,1   | 36    | 11,4  | 2             | GF422801.0229                              | GF422201.0229                              |
|      | 8                       | x | 1       | 6,75                    | 10                | 7                 | 8,4               | 74    | 12,1  | 40    | 15,2  | 2             | GF422801.0251                              | GF422201.0251                              |
|      | 10                      | x | 1       | 8,7                     | 12                | 9                 | 10,5              | 79    | 15,1  | 45    | 18,6  | 2             | GF422801.0276                              | GF422201.0276                              |
| ZBGF | 10                      | x | 1,25    | 8,4                     | 12                | 8,75              | 10,5              | 79    | 15,1  | 45    | 19    | 2             | GF422801.0277                              | GF422201.0277                              |
|      | 12                      | x | 1,25    | 10,4                    | 14                | 10,75             | 12,6              | 89    | 18,9  | 45    | 23,2  | 2             | GF422801.0302                              | GF422201.0302                              |
| GSF  | 12                      | x | 1,5     | 10,15                   | 14                | 10,5              | 12,6              | 89    | 18,1  | 45    | 22,7  | 2             | GF422801.0303                              | GF422201.0303                              |
|      | 14                      | x | 1,5     | 12,1                    | 16                | 12,5              | 14,7              | 102   | 21,1  | 48    | 26,2  | 2             | GF422801.0331                              | GF422201.0331                              |
| GF   | 16                      | x | 1,5     | 14,1                    | 18                | 14,5              | 16,8              | 102   | 24,1  | 48    | 29,6  | 2             | GF422801.0359                              | GF422201.0359                              |

Gewindetiefe  
Thread depth

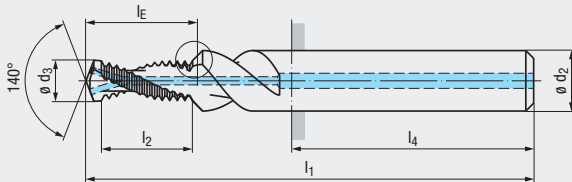
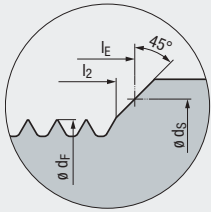
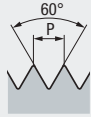
2 x d<sub>1</sub>

|      | $\varnothing d_1$<br>mm |   | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_E$ | Z<br>(Flutes) | BGF-Z2<br>2xd <sub>1</sub><br>R30-1KZ-HA | BGF-Z2<br>2xd <sub>1</sub><br>R30-1KZ-HB |
|------|-------------------------|---|---------|-------------------------|-------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|------------------------------------------|------------------------------------------|
| M    | 6                       | x | 0,75    | 5,05                    | 8                 | 5,25              | 6,3               | 62    | 12,1  | 36    | 14,4  | 2             | GF432801.0229                            | GF432201.0229                            |
|      | 8                       | x | 1       | 6,75                    | 10                | 7                 | 8,4               | 74    | 16,1  | 40    | 19,2  | 2             | GF432801.0251                            | GF432201.0251                            |
|      | 10                      | x | 1       | 8,7                     | 12                | 9                 | 10,5              | 79    | 20,1  | 45    | 23,6  | 2             | GF432801.0276                            | GF432201.0276                            |
| ZBGF | 10                      | x | 1,25    | 8,4                     | 12                | 8,75              | 10,5              | 79    | 20,1  | 45    | 24    | 2             | GF432801.0277                            | GF432201.0277                            |
|      | 12                      | x | 1,25    | 10,4                    | 14                | 10,75             | 12,6              | 89    | 23,9  | 45    | 28,2  | 2             | GF432801.0302                            | GF432201.0302                            |
| GSF  | 12                      | x | 1,5     | 10,15                   | 14                | 10,5              | 12,6              | 89    | 24,1  | 45    | 28,7  | 2             | GF432801.0303                            | GF432201.0303                            |
|      | 14                      | x | 1,5     | 12,1                    | 16                | 12,5              | 14,7              | 102   | 27,1  | 48    | 32,2  | 2             | GF432801.0331                            | GF432201.0331                            |
| GF   | 16                      | x | 1,5     | 14,1                    | 18                | 14,5              | 16,8              | 102   | 31,6  | 48    | 37,1  | 2             | GF432801.0359                            | GF432201.0359                            |

Weitere Ausführungen auf Anfrage  
Further designs upon request

**MF**

DIN 13

**VHM**  
Carbide**TICN****R30****RH + LH****Z2****DIN 6535****BGF-Z2**Einsatzgebiete – Material  
Applications – material

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Gewindetiefe  
Thread depth
**K** 1.1-3.2 **N** 1.1-1.6  
**N** 2.2-2.3, 2.6 **N** 3.1-4.1
**1,5 x d<sub>1</sub>**

|          | ø d <sub>1</sub><br>mm |   | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>5</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) | BGF-Z2<br>1,5xd <sub>1</sub><br>R30-IKZ-HA<br>TICN | BGF-Z2<br>1,5xd <sub>1</sub><br>R30-IKZ-HB<br>TICN |
|----------|------------------------|---|---------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|----------------------------------------------------|----------------------------------------------------|
| <b>M</b> | 6                      | x | 0,75    | 5,05                   | 8                | 5,25             | 6,3              | 62             | 9,1            | 36             | 11,4           | 2             | GF422806.0229                                      | GF422206.0229                                      |
|          | 8                      | x | 1       | 6,75                   | 10               | 7                | 8,4              | 74             | 12,1           | 40             | 15,2           | 2             | GF422806.0251                                      | GF422206.0251                                      |
|          | 10                     | x | 1       | 8,7                    | 12               | 9                | 10,5             | 79             | 15,1           | 45             | 18,6           | 2             | GF422806.0276                                      | GF422206.0276                                      |
|          | 10                     | x | 1,25    | 8,4                    | 12               | 8,75             | 10,5             | 79             | 15,1           | 45             | 19             | 2             | GF422806.0277                                      | GF422206.0277                                      |
|          | 12                     | x | 1,25    | 10,4                   | 14               | 10,75            | 12,6             | 89             | 18,9           | 45             | 23,2           | 2             | GF422806.0302                                      | GF422206.0302                                      |
|          | 12                     | x | 1,5     | 10,15                  | 14               | 10,5             | 12,6             | 89             | 18,1           | 45             | 22,7           | 2             | GF422806.0303                                      | GF422206.0303                                      |
|          | 14                     | x | 1,5     | 12,1                   | 16               | 12,5             | 14,7             | 102            | 21,1           | 48             | 26,2           | 2             | GF422806.0331                                      | GF422206.0331                                      |
|          | 16                     | x | 1,5     | 14,1                   | 18               | 14,5             | 16,8             | 102            | 24,1           | 48             | 29,6           | 2             | GF422806.0359                                      | GF422206.0359                                      |

Gewindetiefe  
Thread depth**2 x d<sub>1</sub>**

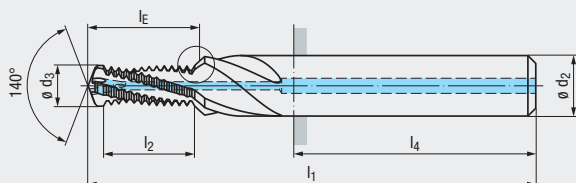
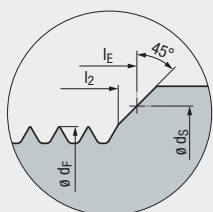
|          | ø d <sub>1</sub><br>mm |   | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>5</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) | BGF-Z2<br>2xd <sub>1</sub><br>R30-IKZ-HA<br>TICN | BGF-Z2<br>2xd <sub>1</sub><br>R30-IKZ-HB<br>TICN |
|----------|------------------------|---|---------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|--------------------------------------------------|--------------------------------------------------|
| <b>M</b> | 6                      | x | 0,75    | 5,05                   | 8                | 5,25             | 6,3              | 62             | 12,1           | 36             | 14,4           | 2             | GF432806.0229                                    | GF432206.0229                                    |
|          | 8                      | x | 1       | 6,75                   | 10               | 7                | 8,4              | 74             | 16,1           | 40             | 19,2           | 2             | GF432806.0251                                    | GF432206.0251                                    |
|          | 10                     | x | 1       | 8,7                    | 12               | 9                | 10,5             | 79             | 20,1           | 45             | 23,6           | 2             | GF432806.0276                                    | GF432206.0276                                    |
|          | 10                     | x | 1,25    | 8,4                    | 12               | 8,75             | 10,5             | 79             | 20,1           | 45             | 24             | 2             | GF432806.0277                                    | GF432206.0277                                    |
|          | 12                     | x | 1,25    | 10,4                   | 14               | 10,75            | 12,6             | 89             | 23,9           | 45             | 28,2           | 2             | GF432806.0302                                    | GF432206.0302                                    |
|          | 12                     | x | 1,5     | 10,15                  | 14               | 10,5             | 12,6             | 89             | 24,1           | 45             | 28,7           | 2             | GF432806.0303                                    | GF432206.0303                                    |
|          | 14                     | x | 1,5     | 12,1                   | 16               | 12,5             | 14,7             | 102            | 27,1           | 48             | 32,2           | 2             | GF432806.0331                                    | GF432206.0331                                    |
|          | 16                     | x | 1,5     | 14,1                   | 18               | 14,5             | 16,8             | 102            | 31,6           | 48             | 37,1           | 2             | GF432806.0359                                    | GF432206.0359                                    |

Weitere Ausführungen auf Anfrage  
Further designs upon requestSpannzangen-Aufnahmen  
Typ KSN/Synchro  
siehe Seite 675 - 676Collet holders  
type KSN/Synchro,  
see page 675 - 676

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |



DIN 13



VHM  
Carbide

TICN

R20

RH + LH

Z4

DIN 6535



BGF-Z4



Einsatzgebiete – Material  
Applications – material

» 358

K 1.1-1.2

N 1.5-1.6, 2.3

Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

|      | $\emptyset d_1$<br>mm |   | P<br>mm | $\emptyset d_F$<br>mm | $\emptyset d_2$ | $\emptyset d_3$ | $\emptyset d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_E$ | Z<br>(Flutes) |
|------|-----------------------|---|---------|-----------------------|-----------------|-----------------|-----------------|-------|-------|-------|-------|---------------|
| M    | 8                     | x | 1       | 6,75                  | 10              | 7               | 8,4             | 74    | 16,1  | 40    | 19,2  | 4             |
|      | 10                    | x | 1       | 8,7                   | 12              | 9               | 10,5            | 79    | 20,1  | 45    | 23,6  | 4             |
|      | 12                    | x | 1,5     | 10,15                 | 14              | 10,5            | 12,6            | 89    | 24,1  | 45    | 28,7  | 4             |
| ZBGF | 16                    | x | 1,5     | 14,1                  | 18              | 14,5            | 16,8            | 102   | 31,6  | 48    | 37,1  | 4             |

BGF-Z4  
2xd<sub>1</sub>  
R20-1KZ-HA  
TICN

BGF-Z4  
2xd<sub>1</sub>  
R20-1KZ-HB  
TICN

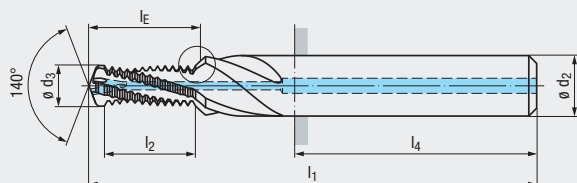
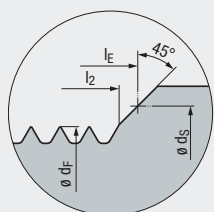
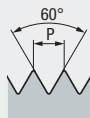
GF439846.0251  
GF439846.0276  
GF439846.0303  
GF439846.0359

GF439246.0251  
GF439246.0276  
GF439246.0303  
GF439246.0359

Weitere Ausführungen auf Anfrage  
Further designs upon request

**MF**

DIN 13

**VHM**  
Carbide**TIALN**  
T3**R20****RH + LH****Z4****DIN 6535****BGF-Z4**Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth**K** 1.1-1.2**N** 1.5-1.6, 2.3**2 x d<sub>1</sub>**

|          | $\varnothing d_1$<br>mm |   | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_E$ | Z<br>(Flutes) | BGF-Z4<br>2xd <sub>1</sub><br>R20-1KZ-HA<br>TIALN-T3 | BGF-Z4<br>2xd <sub>1</sub><br>R20-1KZ-HB<br>TIALN-T3 |
|----------|-------------------------|---|---------|-------------------------|-------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|------------------------------------------------------|------------------------------------------------------|
| <b>M</b> | 8                       | x | 1       | 6,75                    | 10                | 7                 | 8,4               | 74    | 16,1  | 40    | 19,2  | 4             | GF439848.0251                                        | GF439248.0251                                        |
|          | 10                      | x | 1       | 8,7                     | 12                | 9                 | 10,5              | 79    | 20,1  | 45    | 23,6  | 4             | GF439848.0276                                        | GF439248.0276                                        |
|          | 12                      | x | 1,5     | 10,15                   | 14                | 10,5              | 12,6              | 89    | 24,1  | 45    | 28,7  | 4             | GF439848.0303                                        | GF439248.0303                                        |
|          | 16                      | x | 1,5     | 14,1                    | 18                | 14,5              | 16,8              | 102   | 31,6  | 48    | 37,1  | 4             | GF439848.0359                                        | GF439248.0359                                        |

Weitere Ausführungen auf Anfrage  
Further designs upon requestProduct  
Finder $v_c / f_z$ 

M

MF

UNC  
UN, UNSUNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

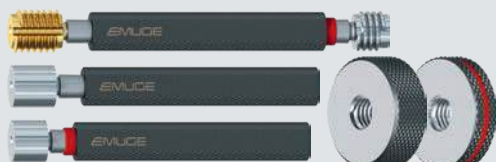
GF-KEG

ZGF

ZIRK-GF

Gigant

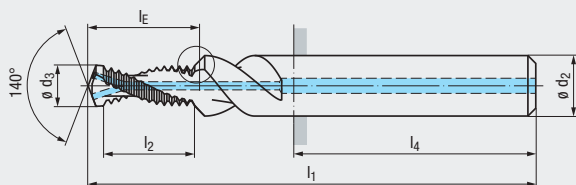
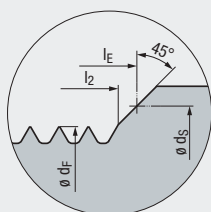
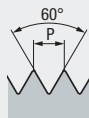
MoSys

Gewindelehren  
siehe Seite 541 - 594Thread gauges,  
see page 541 - 594

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

# UNC

ASME B1.1



VHM  
Carbide

R30

RH + LH

Z2

DIN 6535

HA  
HB



BGF-Z2



Einsatzgebiete – Material  
Applications – material

» 358

K 1.1-3.2 N 1.1-1.5  
N 2.2-2.3, 2.6 N 3.1-4.1

Gewindetiefe  
Thread depth

1,5 x d<sub>1</sub>

| $\emptyset d_1$<br>inch | P<br>Gg/1" (tpi) | $\emptyset d_F$<br>mm | $\emptyset d_2$ | $\emptyset d_3$ | $\emptyset d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_E$ | Z<br>(Flutes) |
|-------------------------|------------------|-----------------------|-----------------|-----------------|-----------------|-------|-------|-------|-------|---------------|
| 1/4                     | 20               | 4,85                  | 8               | 5,2             | 6,7             | 62    | 9     | 36    | 12,1  | 2             |
| 5/16                    | 18               | 6,25                  | 10              | 6,6             | 8,3             | 74    | 11,4  | 40    | 15    | 2             |
| 3/8                     | 16               | 7,65                  | 12              | 8               | 10              | 79    | 14,4  | 45    | 18,6  | 2             |
| 7/16                    | 14               | 9                     | 12              | 9,4             | 11,7            | 79    | 16,5  | 45    | 21,3  | 2             |
| 1/2                     | 13               | 10,35                 | 14              | 10,8            | 13,3            | 89    | 17,7  | 45    | 23,1  | 2             |
| 9/16                    | 12               | 11,8                  | 16              | 12,25           | 15              | 102   | 21,3  | 48    | 27,2  | 2             |
| 5/8                     | 11               | 13,1                  | 18              | 13,5            | 16,7            | 102   | 23,2  | 48    | 29,7  | 2             |

BGF-Z2  
1,5xd<sub>1</sub>  
R30-1KZ-HA

BGF-Z2  
1,5xd<sub>1</sub>  
R30-1KZ-HB

GF422801.5009  
GF422801.5010  
GF422801.5011  
GF422801.5012  
GF422801.5013  
GF422801.5014  
GF422801.5015

GF422201.5009  
GF422201.5010  
GF422201.5011  
GF422201.5012  
GF422201.5013  
GF422201.5014  
GF422201.5015

Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

| $\emptyset d_1$<br>inch | P<br>Gg/1" (tpi) | $\emptyset d_F$<br>mm | $\emptyset d_2$ | $\emptyset d_3$ | $\emptyset d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_E$ | Z<br>(Flutes) |
|-------------------------|------------------|-----------------------|-----------------|-----------------|-----------------|-------|-------|-------|-------|---------------|
| 1/4                     | 20               | 4,85                  | 8               | 5,2             | 6,7             | 62    | 12,8  | 36    | 15,9  | 2             |
| 5/16                    | 18               | 6,25                  | 10              | 6,6             | 8,3             | 74    | 15,6  | 40    | 19,2  | 2             |
| 3/8                     | 16               | 7,65                  | 12              | 8               | 10              | 79    | 19,2  | 45    | 23,3  | 2             |
| 7/16                    | 14               | 9                     | 12              | 9,4             | 11,7            | 79    | 21,9  | 45    | 26,7  | 2             |
| 1/2                     | 13               | 10,35                 | 14              | 10,8            | 13,3            | 89    | 25,5  | 45    | 30,9  | 2             |
| 9/16                    | 12               | 11,8                  | 16              | 12,25           | 15              | 102   | 27,7  | 48    | 33,6  | 2             |
| 5/8                     | 11               | 13,1                  | 18              | 13,5            | 16,7            | 102   | 30,1  | 48    | 36,7  | 2             |

BGF-Z2  
2xd<sub>1</sub>  
R30-1KZ-HA

BGF-Z2  
2xd<sub>1</sub>  
R30-1KZ-HB

GF432801.5009  
GF432801.5010  
GF432801.5011  
GF432801.5012  
GF432801.5013  
GF432801.5014  
GF432801.5015

GF432201.5009  
GF432201.5010  
GF432201.5011  
GF432201.5012  
GF432201.5013  
GF432201.5014  
GF432201.5015

Gewindetiefe  
Thread depth

2,5 x d<sub>1</sub>

| $\emptyset d_1$<br>inch | P<br>Gg/1" (tpi) | $\emptyset d_F$<br>mm | $\emptyset d_2$ | $\emptyset d_3$ | $\emptyset d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_E$ | Z<br>(Flutes) |
|-------------------------|------------------|-----------------------|-----------------|-----------------|-----------------|-------|-------|-------|-------|---------------|
| 3/8                     | 16               | 7,65                  | 12              | 8               | 10              | 85    | 23,9  | 45    | 28,1  | 2             |
| 7/16                    | 14               | 9                     | 12              | 9,4             | 11,7            | 85    | 27,3  | 45    | 32,2  | 2             |
| 1/2                     | 13               | 10,35                 | 14              | 10,8            | 13,3            | 95    | 31,4  | 45    | 36,7  | 2             |
| 9/16                    | 12               | 11,8                  | 16              | 12,25           | 15              | 110   | 34    | 48    | 39,9  | 2             |

BGF-Z2  
2,5xd<sub>1</sub>  
R30-1KZ-HA

BGF-Z2  
2,5xd<sub>1</sub>  
R30-1KZ-HB

GF442801.5011  
GF442801.5012  
GF442801.5013  
GF442801.5014

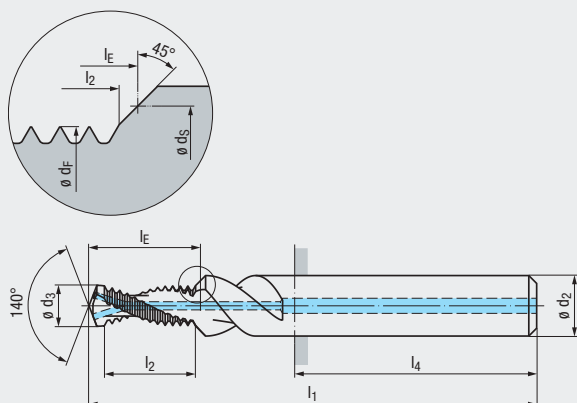
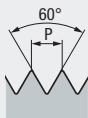
GF442201.5011  
GF442201.5012  
GF442201.5013  
GF442201.5014

Weitere Ausführungen auf Anfrage  
Further designs upon request



**UNC**

ASME B1.1

**VHM**  
Carbide**TICN****R30****RH + LH****Z2****DIN 6535**

HA

HB

**BGF-Z2**Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth**K 1.1-3.2****N 2.2-2.3, 2.6****N 1.1-1.6****N 3.1-4.1****1,5 x d<sub>1</sub>**

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | Ø d <sub>3</sub> | Ø d <sub>5</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) | BGF-Z2<br>1,5xd <sub>1</sub><br>R30-1KZ-HA<br>TICN | BGF-Z2<br>1,5xd <sub>1</sub><br>R30-1KZ-HB<br>TICN |
|--------------------------|------------------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|----------------------------------------------------|----------------------------------------------------|
| 1/4                      | 20               | 4,85                   | 8                | 5,2              | 6,7              | 62             | 9              | 36             | 12,1           | 2             | GF422806.5009                                      | GF422206.5009                                      |
| 5/16                     | 18               | 6,25                   | 10               | 6,6              | 8,3              | 74             | 11,4           | 40             | 15             | 2             | GF422806.5010                                      | GF422206.5010                                      |
| 3/8                      | 16               | 7,65                   | 12               | 8                | 10               | 79             | 14,4           | 45             | 18,6           | 2             | GF422806.5011                                      | GF422206.5011                                      |
| 7/16                     | 14               | 9                      | 12               | 9,4              | 11,7             | 79             | 16,5           | 45             | 21,3           | 2             | GF422806.5012                                      | GF422206.5012                                      |
| 1/2                      | 13               | 10,35                  | 14               | 10,8             | 13,3             | 89             | 17,7           | 45             | 23,1           | 2             | GF422806.5013                                      | GF422206.5013                                      |
| 9/16                     | 12               | 11,8                   | 16               | 12,25            | 15               | 102            | 21,3           | 48             | 27,2           | 2             | GF422806.5014                                      | GF422206.5014                                      |
| 5/8                      | 11               | 13,1                   | 18               | 13,5             | 16,7             | 102            | 23,2           | 48             | 29,7           | 2             | GF422806.5015                                      | GF422206.5015                                      |

Gewindetiefe  
Thread depth

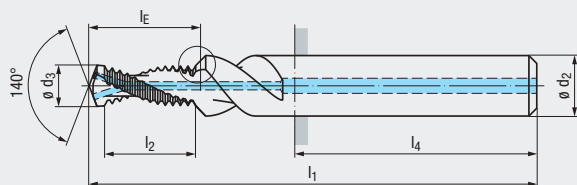
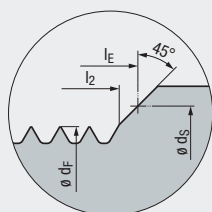
| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | Ø d <sub>3</sub> | Ø d <sub>5</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) | BGF-Z2<br>2xd <sub>1</sub><br>R30-1KZ-HA<br>TICN | BGF-Z2<br>2xd <sub>1</sub><br>R30-1KZ-HB<br>TICN |
|--------------------------|------------------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|--------------------------------------------------|--------------------------------------------------|
| 1/4                      | 20               | 4,85                   | 8                | 5,2              | 6,7              | 62             | 12,8           | 36             | 15,9           | 2             | GF432806.5009                                    | GF432206.5009                                    |
| 5/16                     | 18               | 6,25                   | 10               | 6,6              | 8,3              | 74             | 15,6           | 40             | 19,2           | 2             | GF432806.5010                                    | GF432206.5010                                    |
| 3/8                      | 16               | 7,65                   | 12               | 8                | 10               | 79             | 19,2           | 45             | 23,3           | 2             | GF432806.5011                                    | GF432206.5011                                    |
| 7/16                     | 14               | 9                      | 12               | 9,4              | 11,7             | 79             | 21,9           | 45             | 26,7           | 2             | GF432806.5012                                    | GF432206.5012                                    |
| 1/2                      | 13               | 10,35                  | 14               | 10,8             | 13,3             | 89             | 25,5           | 45             | 30,9           | 2             | GF432806.5013                                    | GF432206.5013                                    |
| 9/16                     | 12               | 11,8                   | 16               | 12,25            | 15               | 102            | 27,7           | 48             | 33,6           | 2             | GF432806.5014                                    | GF432206.5014                                    |
| 5/8                      | 11               | 13,1                   | 18               | 13,5             | 16,7             | 102            | 30,1           | 48             | 36,7           | 2             | GF432806.5015                                    | GF432206.5015                                    |

Gewindetiefe  
Thread depth

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | Ø d <sub>3</sub> | Ø d <sub>5</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) | BGF-Z2<br>2,5xd <sub>1</sub><br>R30-1KZ-HA<br>TICN | BGF-Z2<br>2,5xd <sub>1</sub><br>R30-1KZ-HB<br>TICN |
|--------------------------|------------------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|----------------------------------------------------|----------------------------------------------------|
| 3/8                      | 16               | 7,65                   | 12               | 8                | 10               | 85             | 23,9           | 45             | 28,1           | 2             | GF442806.5011                                      | GF442206.5011                                      |
| 7/16                     | 14               | 9                      | 12               | 9,4              | 11,7             | 85             | 27,3           | 45             | 32,2           | 2             | GF442806.5012                                      | GF442206.5012                                      |
| 1/2                      | 13               | 10,35                  | 14               | 10,8             | 13,3             | 95             | 31,4           | 45             | 36,7           | 2             | GF442806.5013                                      | GF442206.5013                                      |
| 9/16                     | 12               | 11,8                   | 16               | 12,25            | 15               | 110            | 34             | 48             | 39,9           | 2             | GF442806.5014                                      | GF442206.5014                                      |

Weitere Ausführungen auf Anfrage  
Further designs upon request

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |



VHM  
Carbide

R30

RH + LH

Z2

DIN 6535

HA  
HB



BGF-Z2



Einsatzgebiete – Material  
Applications – material

» 358

K 1.1-3.2 N 1.1-1.5  
N 2.2-2.3, 2.6 N 3.1-4.1

Gewindetiefe  
Thread depth

1,5 x d<sub>1</sub>

| $\varnothing d_1$<br>inch | P<br>Gg/1" (tpi) | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_E$ | Z<br>(Flutes) |
|---------------------------|------------------|-------------------------|-------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|
| 1/4                       | 28               | 5,26                    | 8                 | 5,5               | 6,7               | 62    | 9,2   | 36    | 11,8  | 2             |
| 5/16                      | 24               | 6,6                     | 10                | 6,9               | 8,3               | 74    | 11,7  | 40    | 14,9  | 2             |
| 3/8                       | 24               | 8,2                     | 12                | 8,5               | 10                | 79    | 13,9  | 45    | 17,3  | 2             |
| 7/16                      | 20               | 9,55                    | 12                | 9,9               | 11,7              | 79    | 17,9  | 45    | 22    | 2             |
| 1/2                       | 20               | 11,1                    | 14                | 11,5              | 13,3              | 89    | 19,2  | 45    | 23,6  | 2             |
| 9/16                      | 18               | 12,5                    | 16                | 12,9              | 15                | 102   | 21,3  | 48    | 26,3  | 2             |
| 5/8                       | 18               | 14,1                    | 18                | 14,5              | 16,7              | 102   | 22,7  | 48    | 28,1  | 2             |

BGF-Z2  
1,5xd<sub>1</sub>  
R30-1KZ-HA

BGF-Z2  
1,5xd<sub>1</sub>  
R30-1KZ-HB

GF422801.5043  
GF422801.5044  
GF422801.5045  
GF422801.5046  
GF422801.5047  
GF422801.5048  
GF422801.5049

GF422201.5043  
GF422201.5044  
GF422201.5045  
GF422201.5046  
GF422201.5047  
GF422201.5048  
GF422201.5049

Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

| $\varnothing d_1$<br>inch | P<br>Gg/1" (tpi) | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_E$ | Z<br>(Flutes) |
|---------------------------|------------------|-------------------------|-------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|
| 1/4                       | 28               | 5,26                    | 8                 | 5,5               | 6,7               | 62    | 12,8  | 36    | 15,4  | 2             |
| 5/16                      | 24               | 6,6                     | 10                | 6,9               | 8,3               | 74    | 16    | 40    | 19,1  | 2             |
| 3/8                       | 24               | 8,2                     | 12                | 8,5               | 10                | 79    | 19,2  | 45    | 22,6  | 2             |
| 7/16                      | 20               | 9,55                    | 12                | 9,9               | 11,7              | 79    | 21,7  | 45    | 25,8  | 2             |
| 1/2                       | 20               | 11,1                    | 14                | 11,5              | 13,3              | 89    | 25,6  | 45    | 30    | 2             |
| 9/16                      | 18               | 12,5                    | 16                | 12,9              | 15                | 102   | 28,4  | 48    | 33,4  | 2             |
| 5/8                       | 18               | 14,1                    | 18                | 14,5              | 16,7              | 102   | 31,2  | 48    | 36,5  | 2             |

BGF-Z2  
2xd<sub>1</sub>  
R30-1KZ-HA

BGF-Z2  
2xd<sub>1</sub>  
R30-1KZ-HB

GF432801.5043  
GF432801.5044  
GF432801.5045  
GF432801.5046  
GF432801.5047  
GF432801.5048  
GF432801.5049

GF432201.5043  
GF432201.5044  
GF432201.5045  
GF432201.5046  
GF432201.5047  
GF432201.5048  
GF432201.5049

Weitere Ausführungen auf Anfrage  
Further designs upon request

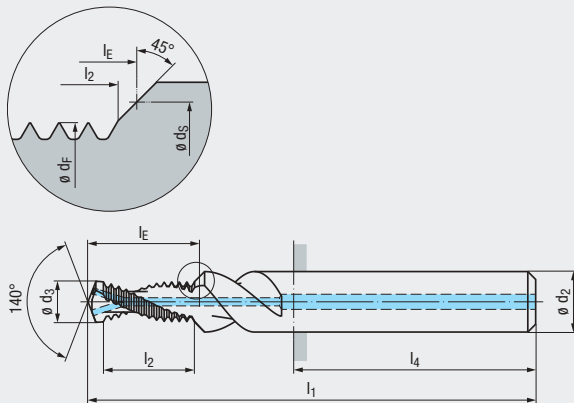


Gewinde-Tiefenlehrdorne  
siehe Seite 588 - 591

Thread depth plug gauges,  
see page 588 - 591

**UNF**

ASME B1.1

**VHM  
Carbide****TICN****R30****RH + LH****Z2****DIN 6535****BGF-Z2**Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth**K 1.1-3.2****N 2.2-2.3, 2.6****N 1.1-1.6****N 3.1-4.1****1,5 x d<sub>1</sub>**

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | Ø d <sub>3</sub> | Ø d <sub>5</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) | BGF-Z2<br>1,5xd <sub>1</sub><br>R30-IKZ-HA<br>TICN | BGF-Z2<br>1,5xd <sub>1</sub><br>R30-IKZ-HB<br>TICN |
|--------------------------|------------------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|----------------------------------------------------|----------------------------------------------------|
| 1/4                      | 28               | 5,26                   | 8                | 5,5              | 6,7              | 62             | 9,2            | 36             | 11,8           | 2             | GF422806.5043                                      | GF422206.5043                                      |
| 5/16                     | 24               | 6,6                    | 10               | 6,9              | 8,3              | 74             | 11,7           | 40             | 14,9           | 2             | GF422806.5044                                      | GF422206.5044                                      |
| 3/8                      | 24               | 8,2                    | 12               | 8,5              | 10               | 79             | 13,9           | 45             | 17,3           | 2             | GF422806.5045                                      | GF422206.5045                                      |
| 7/16                     | 20               | 9,55                   | 12               | 9,9              | 11,7             | 79             | 17,9           | 45             | 22             | 2             | GF422806.5046                                      | GF422206.5046                                      |
| 1/2                      | 20               | 11,1                   | 14               | 11,5             | 13,3             | 89             | 19,2           | 45             | 23,6           | 2             | GF422806.5047                                      | GF422206.5047                                      |
| 9/16                     | 18               | 12,5                   | 16               | 12,9             | 15               | 102            | 21,3           | 48             | 26,3           | 2             | GF422806.5048                                      | GF422206.5048                                      |
| 5/8                      | 18               | 14,1                   | 18               | 14,5             | 16,7             | 102            | 22,7           | 48             | 28,1           | 2             | GF422806.5049                                      | GF422206.5049                                      |

Gewindetiefe  
Thread depth**2 x d<sub>1</sub>**

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | Ø d <sub>3</sub> | Ø d <sub>5</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) | BGF-Z2<br>2xd <sub>1</sub><br>R30-IKZ-HA<br>TICN | BGF-Z2<br>2xd <sub>1</sub><br>R30-IKZ-HB<br>TICN |
|--------------------------|------------------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|--------------------------------------------------|--------------------------------------------------|
| 1/4                      | 28               | 5,26                   | 8                | 5,5              | 6,7              | 62             | 12,8           | 36             | 15,4           | 2             | GF432806.5043                                    | GF432206.5043                                    |
| 5/16                     | 24               | 6,6                    | 10               | 6,9              | 8,3              | 74             | 16             | 40             | 19,1           | 2             | GF432806.5044                                    | GF432206.5044                                    |
| 3/8                      | 24               | 8,2                    | 12               | 8,5              | 10               | 79             | 19,2           | 45             | 22,6           | 2             | GF432806.5045                                    | GF432206.5045                                    |
| 7/16                     | 20               | 9,55                   | 12               | 9,9              | 11,7             | 79             | 21,7           | 45             | 25,8           | 2             | GF432806.5046                                    | GF432206.5046                                    |
| 1/2                      | 20               | 11,1                   | 14               | 11,5             | 13,3             | 89             | 25,6           | 45             | 30             | 2             | GF432806.5047                                    | GF432206.5047                                    |
| 9/16                     | 18               | 12,5                   | 16               | 12,9             | 15               | 102            | 28,4           | 48             | 33,4           | 2             | GF432806.5048                                    | GF432206.5048                                    |
| 5/8                      | 18               | 14,1                   | 18               | 14,5             | 16,7             | 102            | 31,2           | 48             | 36,5           | 2             | GF432806.5049                                    | GF432206.5049                                    |

Weitere Ausführungen auf Anfrage  
Further designs upon requestProduct  
Finderv<sub>c</sub> / f<sub>z</sub>

M

MF

UNC

UN, UNS

**UNF**

UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories**BGF**

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

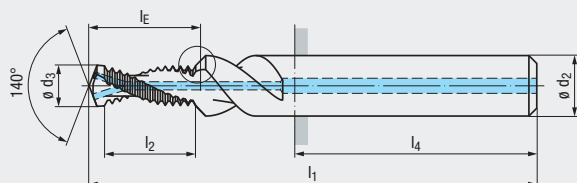
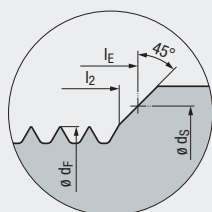
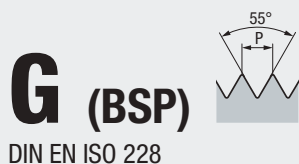
ZIRK-GF

Gigant

MoSys



|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |



**VHM**  
Carbide

**R30**

**RH + LH**

**Z2**

**DIN 6535**

HA  
HB



**BGF-Z2**



Einsatzgebiete – Material  
Applications – material

» 358

**K** 1.1-3.2 **N** 1.1-1.5  
**N** 2.2-2.3, 2.6 **N** 3.1-4.1

Gewindetiefe  
Thread depth

**1,5 x d<sub>1</sub>**

| Nenngröße<br>Nom. size | P           | ø d <sub>F</sub> | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) |
|------------------------|-------------|------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|
| ø d <sub>1</sub>       | Gg/1" (tpi) | mm               |                  |                  |                  |                |                |                |                |               |
| <b>G</b> 1/8           | 28          | 8,5              | 12               | 8,8              | 10,2             | 79             | 14,6           | 45             | 17,9           | 2             |
| 1/4                    | 19          | 11,4             | 16               | 11,8             | 13,8             | 102            | 18,8           | 48             | 23,4           | 2             |
| 3/8                    | 19          | 14,85            | 18               | 15,25            | 17,5             | 102            | 25,5           | 48             | 30,9           | 2             |

**BGF-Z2**  
**1,5xd<sub>1</sub>**  
**R30-1KZ-HA**

**BGF-Z2**  
**1,5xd<sub>1</sub>**  
**R30-1KZ-HB**

**GF422801.4035**  
**GF422801.4036**  
**GF422801.4037**

**GF422201.4035**  
**GF422201.4036**  
**GF422201.4037**

Gewindetiefe  
Thread depth

**2 x d<sub>1</sub>**

| Nenngröße<br>Nom. size | P           | ø d <sub>F</sub> | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) |
|------------------------|-------------|------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|
| ø d <sub>1</sub>       | Gg/1" (tpi) | mm               |                  |                  |                  |                |                |                |                |               |
| <b>G</b> 1/8           | 28          | 8,5              | 12               | 8,8              | 10,2             | 79             | 19,1           | 45             | 22,4           | 2             |
| 1/4                    | 19          | 11,4             | 16               | 11,8             | 13,8             | 102            | 25,5           | 48             | 30,1           | 2             |
| 3/8                    | 19          | 14,85            | 18               | 15,25            | 17,5             | 102            | 33,5           | 48             | 38,9           | 2             |

**BGF-Z2**  
**2xd<sub>1</sub>**  
**R30-1KZ-HA**

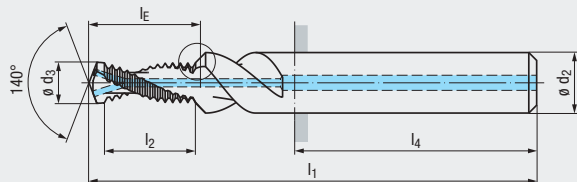
**BGF-Z2**  
**2xd<sub>1</sub>**  
**R30-1KZ-HB**

**GF432801.4035**  
**GF432801.4036**  
**GF432801.4037**

**GF432201.4035**  
**GF432201.4036**  
**GF432201.4037**

Weitere Ausführungen auf Anfrage  
Further designs upon request

A diagram showing a cross-section of a V-shaped groove. The angle between the two sloped sides is labeled as  $55^\circ$ . The width of the groove at a certain depth is labeled as  $P$ .



358

|          |                     |          |                |
|----------|---------------------|----------|----------------|
| <b>K</b> | <b>1.1-3.2</b>      | <b>N</b> | <b>1.1-1.6</b> |
| <b>N</b> | <b>2.2-2.3, 2.6</b> | <b>N</b> | <b>3.1-4.1</b> |

**1,5 x d<sub>1</sub>**

|          | Nenngröße | P  | ø d <sub>F</sub> | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z |
|----------|-----------|----|------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---|
|          | Nom. size |    |                  |                  |                  |                  |                |                |                |                |   |
| <b>G</b> | 1/8       | 28 | 8,5              | 12               | 8,8              | 10,2             | 79             | 14,6           | 45             | 17,9           | 2 |
|          | 1/4       | 19 | 11,4             | 16               | 11,8             | 13,8             | 102            | 18,8           | 48             | 23,4           | 2 |
|          | 3/8       | 19 | 14,85            | 18               | 15,25            | 17,5             | 102            | 25,5           | 48             | 30,9           | 2 |

**BGF-Z2  
1,5xd<sub>1</sub>  
R30-IKZ-HA  
TICN**

GF422806.403  
GF422806.403  
GF422806.403

**BGF-Z2**  
**1,5xd<sub>1</sub>**  
**R30-IKZ-HB**  
**TICN**

GF422206.4035  
GF422206.4036  
GF422206.4037



**2 x d<sub>1</sub>**

|          | Nenngröße |                  | P     | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) |
|----------|-----------|------------------|-------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|
|          | Nom. size | ø d <sub>1</sub> |       |                        |                  |                  |                  |                |                |                |                |               |
| <b>G</b> | 1/8       | 28               | 8,5   | 12                     | 8,8              | 10,2             | 79               | 19,1           | 45             | 22,4           | 2              |               |
|          | 1/4       | 19               | 11,4  | 16                     | 11,8             | 13,8             | 102              | 25,5           | 48             | 30,1           | 2              |               |
|          | 3/8       | 19               | 14.85 | 18                     | 15.25            | 17,5             | 102              | 33,5           | 48             | 38.9           | 2              |               |

**BGF-Z2**  
**2xd<sub>1</sub>**  
**R30-IKZ-HA**  
**TICN**

GF432806.403  
GF432806.403  
GF432806.403

**BGF-Z2**  
**2xd<sub>1</sub>**  
**R30-1KZ-HB**  
**TICN**

GF432206.4035  
GF432206.4036  
GF432206.4037

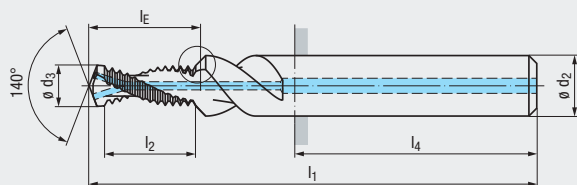
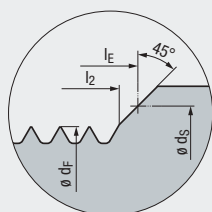
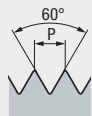
Weitere Ausführungen auf Anfrage  
Further designs upon request



|                    |
|--------------------|
| Product Finder     |
| $v_c / f_z$        |
| M                  |
| MF                 |
| UNC<br>UN, UNS     |
| UNF<br>UNEF        |
| G, Rp              |
| NPT, NPTF<br>Rc, W |
| BSW, BSF           |
| Pg                 |
| MJ<br>UNJC, UNJF   |
| EG (STI)           |

# EG M (STI)

DIN 8140-2



VHM  
Carbide

R30

RH + LH

Z2



DIN 6535

HA

HB



BGF-Z2



Einsatzgebiete – Material  
Applications – material

» 358

K 1.1-3.2 N 1.1-1.5  
N 2.2-2.3, 2.6 N 3.1-4.1

Gewindetiefe  
Thread depth

1,5 x d<sub>1</sub>

|      | Nenngröße<br>Nom. size<br>Ø d <sub>1</sub> | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | Ø d <sub>3</sub> | Ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) | BGF-Z2<br>1,5xd <sub>1</sub><br>R30-1KZ-HA | BGF-Z2<br>1,5xd <sub>1</sub><br>R30-1KZ-HB |
|------|--------------------------------------------|------------------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|--------------------------------------------|--------------------------------------------|
| BGF  | EG M 6                                     | 1                | 6                      | 10               | 6,3              | 7,7              | 74             | 10,1           | 40             | 13,1           | 2             | GF422801.0971                              | GF422201.0971                              |
|      | 8                                          | 1,25             | 8,1                    | 12               | 8,4              | 10,1             | 79             | 12,6           | 45             | 16,4           | 2             | GF422801.0973                              | GF422201.0973                              |
| ZBGF | 10                                         | 1,5              | 10                     | 14               | 10,4             | 12,5             | 89             | 16,6           | 45             | 21,3           | 2             | GF422801.0975                              | GF422201.0975                              |
|      | 12                                         | 1,75             | 12,1                   | 16               | 12,5             | 15               | 102            | 19,4           | 48             | 24,8           | 2             | GF422801.0977                              | GF422201.0977                              |
| GSF  | 14                                         | 2                | 14,1                   | 18               | 14,5             | 17,4             | 102            | 22,1           | 48             | 28,4           | 2             | GF422801.0978                              | GF422201.0978                              |
|      | 16                                         | 2                | 16                     | 20               | 16,5             | 19,5             | 115            | 26,1           | 50             | 32,9           | 2             | GF422801.0979                              | GF422201.0979                              |

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Gewindetiefe  
Thread depth

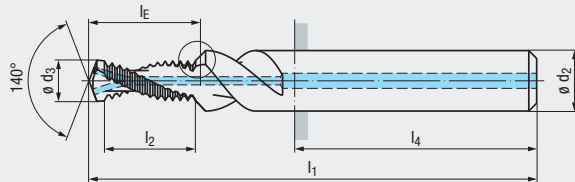
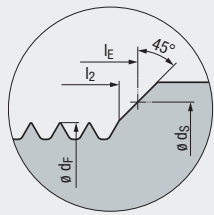
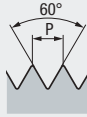
2 x d<sub>1</sub>

|      | Nenngröße<br>Nom. size<br>Ø d <sub>1</sub> | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | Ø d <sub>3</sub> | Ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z<br>(Flutes) | BGF-Z2<br>2xd <sub>1</sub><br>R30-1KZ-HA | BGF-Z2<br>2xd <sub>1</sub><br>R30-1KZ-HB |
|------|--------------------------------------------|------------------|------------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|------------------------------------------|------------------------------------------|
| BGF  | EG M 6                                     | 1                | 6                      | 10               | 6,3              | 7,7              | 74             | 13,1           | 40             | 16,1           | 2             | GF432801.0971                            | GF432201.0971                            |
|      | 8                                          | 1,25             | 8,1                    | 12               | 8,4              | 10,1             | 79             | 16,3           | 45             | 20,1           | 2             | GF432801.0973                            | GF432201.0973                            |
| ZBGF | 10                                         | 1,5              | 10                     | 14               | 10,4             | 12,5             | 89             | 21,1           | 45             | 25,8           | 2             | GF432801.0975                            | GF432201.0975                            |
|      | 12                                         | 1,75             | 12,1                   | 16               | 12,5             | 15               | 102            | 24,6           | 48             | 30,1           | 2             | GF432801.0977                            | GF432201.0977                            |
| GSF  | 14                                         | 2                | 14,1                   | 18               | 14,5             | 17,4             | 102            | 30,1           | 48             | 36,4           | 2             | GF432801.0978                            | GF432201.0978                            |
|      | 16                                         | 2                | 16                     | 20               | 16,5             | 19,5             | 115            | 34,1           | 50             | 40,9           | 2             | GF432801.0979                            | GF432201.0979                            |

Weitere Ausführungen auf Anfrage  
Further designs upon request

**EG M (STI)**

DIN 8140-2

**VHM  
Carbide****TICN****R30****RH + LH****Z2****DIN 6535**HA  
HB**BGF-Z2**Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

|      | Nenngröße        |             | P    | ø d <sub>F</sub> | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z        |
|------|------------------|-------------|------|------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|----------|
|      | Nom. size        |             |      |                  |                  |                  |                  |                |                |                |                |          |
|      | ø d <sub>1</sub> | Gg/1" (tpi) | mm   |                  |                  |                  |                  |                |                |                |                | (Flutes) |
| EG M | 6                | 1           | 6    | 10               | 6,3              | 7,7              | 74               | 10,1           | 40             | 13,1           | 2              |          |
|      | 8                | 1,25        | 8,1  | 12               | 8,4              | 10,1             | 79               | 12,6           | 45             | 16,4           | 2              |          |
|      | 10               | 1,5         | 10   | 14               | 10,4             | 12,5             | 89               | 16,6           | 45             | 21,3           | 2              |          |
|      | 12               | 1,75        | 12,1 | 16               | 12,5             | 15               | 102              | 19,4           | 48             | 24,8           | 2              |          |
|      | 14               | 2           | 14,1 | 18               | 14,5             | 17,4             | 102              | 22,1           | 48             | 28,4           | 2              |          |
|      | 16               | 2           | 16   | 20               | 16,5             | 19,5             | 115              | 26,1           | 50             | 32,9           | 2              |          |

**K 1.1-3.2****N 1.1-1.6****N 2.2-2.3, 2.6****N 3.1-4.1****1,5 x d<sub>1</sub>****BGF-Z2  
1,5xd<sub>1</sub>  
R30-1KZ-HA  
TICN****BGF-Z2  
1,5xd<sub>1</sub>  
R30-1KZ-HB  
TICN**GF422806.0971  
GF422806.0973  
GF422806.0975  
GF422806.0977  
GF422806.0978  
GF422806.0979GF422206.0971  
GF422206.0973  
GF422206.0975  
GF422206.0977  
GF422206.0978  
GF422206.0979Gewindetiefe  
Thread depth

|      | Nenngröße        |             | P    | ø d <sub>F</sub> | ø d <sub>2</sub> | ø d <sub>3</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>E</sub> | Z        |
|------|------------------|-------------|------|------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|----------|
|      | Nom. size        |             |      |                  |                  |                  |                  |                |                |                |                |          |
|      | ø d <sub>1</sub> | Gg/1" (tpi) | mm   |                  |                  |                  |                  |                |                |                |                | (Flutes) |
| EG M | 6                | 1           | 6    | 10               | 6,3              | 7,7              | 74               | 13,1           | 40             | 16,1           | 2              |          |
|      | 8                | 1,25        | 8,1  | 12               | 8,4              | 10,1             | 79               | 16,3           | 45             | 20,1           | 2              |          |
|      | 10               | 1,5         | 10   | 14               | 10,4             | 12,5             | 89               | 21,1           | 45             | 25,8           | 2              |          |
|      | 12               | 1,75        | 12,1 | 16               | 12,5             | 15               | 102              | 24,6           | 48             | 30,1           | 2              |          |
|      | 14               | 2           | 14,1 | 18               | 14,5             | 17,4             | 102              | 30,1           | 48             | 36,4           | 2              |          |
|      | 16               | 2           | 16   | 20               | 16,5             | 19,5             | 115              | 34,1           | 50             | 40,9           | 2              |          |

**2 x d<sub>1</sub>****BGF-Z2  
2xd<sub>1</sub>  
R30-1KZ-HA  
TICN****BGF-Z2  
2xd<sub>1</sub>  
R30-1KZ-HB  
TICN**GF432806.0971  
GF432806.0973  
GF432806.0975  
GF432806.0977  
GF432806.0978  
GF432806.0979GF432206.0971  
GF432206.0973  
GF432206.0975  
GF432206.0977  
GF432206.0978  
GF432206.0979Weitere Ausführungen auf Anfrage  
Further designs upon requestProduct  
Finderv<sub>c</sub> / f<sub>z</sub>

M

MF

UNC  
UN, UNSUNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF**EG (STI)**

SELF-LOCK

Tr

Zubehör  
Accessories**BGF**

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys

Gewindebohrer für Metrisches  
EG-Gewinde siehe Seite 280 - 283Taps for Metric STI thread,  
see page 280 - 283

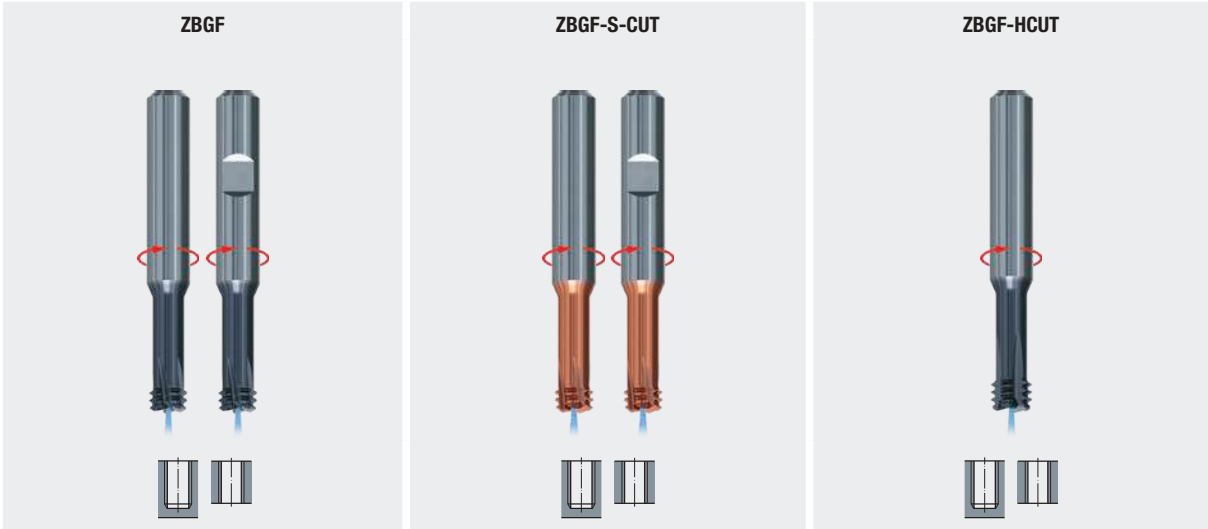


|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

|            |
|------------|
| <b>BGF</b> |
| ZBGF       |
| GSF        |
| GF         |
| GF-VZ      |
| GF-KEG     |
| ZGF        |
| ZIRK-GF    |
| Gigant     |
| MoSys      |





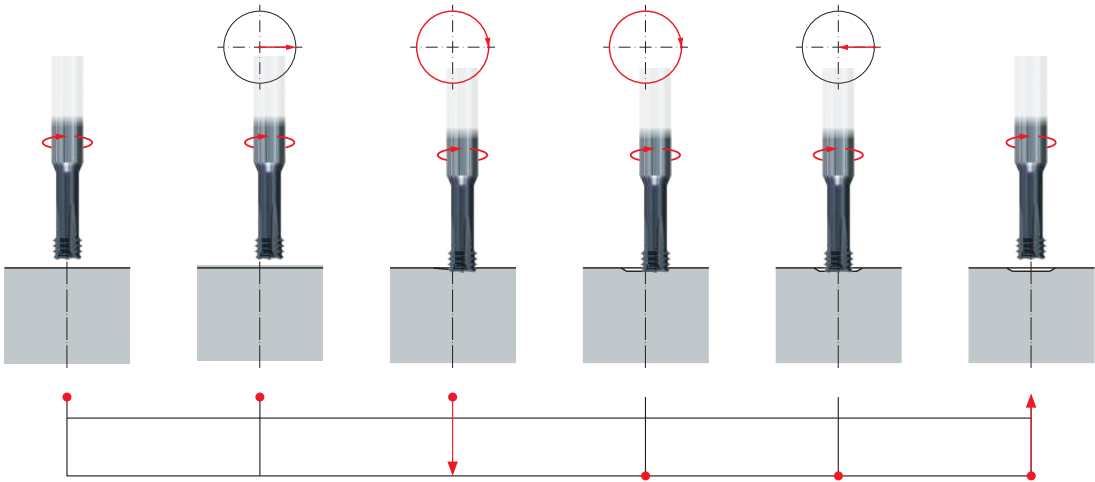


Seite · Page

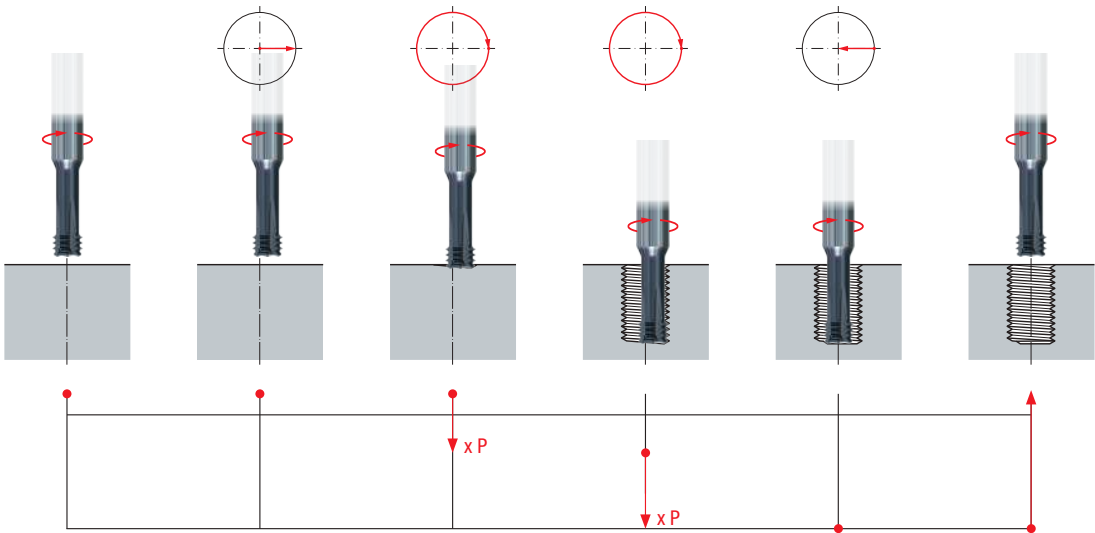
|     |     |     |
|-----|-----|-----|
| 390 | 394 | 401 |
| 391 | 395 |     |
| 392 | 396 | 402 |
| 393 | 397 | 403 |
|     | 398 |     |
|     | 399 |     |
|     | 400 |     |

Mögliche Modifikationen siehe Seite 356 - 357  
Possible modifications, see pages 356 - 357

Zirkulares Anfasen · Circular chamfering



Gewindefräszyklus · Thread milling cycle

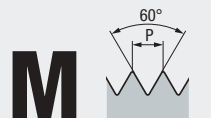


| Product Finder         |
|------------------------|
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| M                      |
| MJ<br>UNJC, UNJF       |
| UNC                    |
| UNF                    |
| MJ                     |
| UNJC                   |
| UNJF                   |
| Zubehör<br>Accessories |

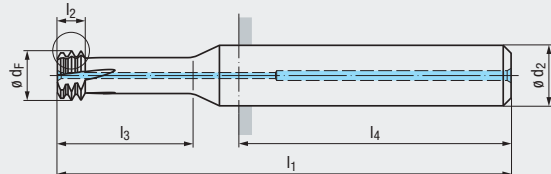
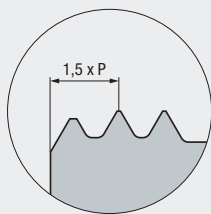
|         |
|---------|
| BGF     |
| ZBGF    |
| GSF     |
| GF      |
| GF-VZ   |
| GF-KEG  |
| ZGF     |
| ZIRK-GF |
| Gigant  |
| MoSys   |



|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |



DIN 13



VHM  
Carbide

TIALN  
86

RH + LH

LH-rot.

L10



DIN 6535



Zum Anfasen geeignet  
Suitable for chamfering



ZBGF



new



new



new



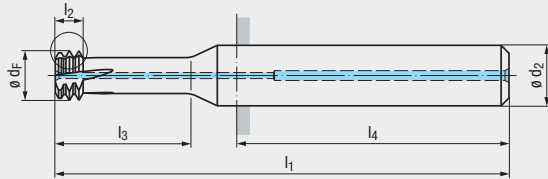
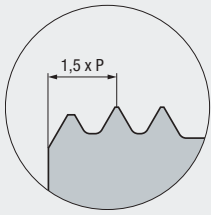
P 1.1-5.1 M 1.1-4.1  
K 1.1-4.2 N 1.1-5.3

2,5 x d<sub>1</sub>

|                                                      |         |                        |                  |                |                |                |                |               |   |                                                                                                               |                                                      |                                                      |
|------------------------------------------------------|---------|------------------------|------------------|----------------|----------------|----------------|----------------|---------------|---|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| Einsatzgebiete – Material<br>Applications – material |         |                        |                  |                |                |                |                |               |   | <div><div><div>P1.1-5.1</div><div>K1.1-4.2</div></div><div><div>M1.1-4.1</div><div>N1.1-5.3</div></div></div> |                                                      |                                                      |
| Gewindetiefe<br>Thread depth                         |         |                        |                  |                |                |                |                |               |   | 2,5 x d <sub>1</sub>                                                                                          |                                                      |                                                      |
|                                                      |         |                        |                  |                |                |                |                |               |   | ZBGF<br>2,5xd <sub>1</sub><br>L10-HA<br>TIALN-86                                                              | ZBGF<br>2,5xd <sub>1</sub><br>L10-IKZ-HA<br>TIALN-86 | ZBGF<br>2,5xd <sub>1</sub><br>L10-IKZ-HB<br>TIALN-86 |
| ø d <sub>1</sub><br>mm                               | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) |   |                                                                                                               |                                                      |                                                      |
| M                                                    | 3       | 0,5                    | 2,25             | 3              | 39             | 1,5            | 8,3            | 28            | 4 | GF74682C.0030                                                                                                 |                                                      |                                                      |
|                                                      | 4       | 0,7                    | 2,95             | 4              | 42             | 2,1            | 11,1           | 28            | 4 | GF74682C.0040                                                                                                 |                                                      |                                                      |
|                                                      | 5       | 0,8                    | 3,8              | 6              | 55             | 2,4            | 13,7           | 36            | 4 |                                                                                                               | GF74682C.0050                                        | GF74622C.0050                                        |
|                                                      | 6       | 1                      | 4,5              | 6              | 58             | 3              | 16,5           | 36            | 4 |                                                                                                               | GF74682C.0060                                        | GF74622C.0060                                        |
|                                                      | 8       | 1,25                   | 6,13             | 8              | 63             | 3,8            | 21,9           | 36            | 4 |                                                                                                               | GF74682C.0080                                        | GF74622C.0080                                        |
|                                                      | 10      | 1,5                    | 7,75             | 10             | 74             | 4,5            | 27,3           | 40            | 4 |                                                                                                               | GF74682C.0100                                        | GF74622C.0100                                        |
|                                                      | 12      | 1,75                   | 9,38             | 10             | 78             | 5,3            | 32,6           | 40            | 5 |                                                                                                               | GF74682C.0112                                        | GF74622C.0112                                        |
|                                                      | 14      | 2                      | 11               | 12             | 88             | 6              | 38             | 45            | 5 |                                                                                                               | GF74682C.0114                                        | GF74622C.0114                                        |
|                                                      | 16      | 2                      | 13               | 14             | 95             | 6              | 43             | 45            | 5 |                                                                                                               | GF74682C.0116                                        | GF74622C.0116                                        |
|                                                      | 20      | 2,5                    | 16,25            | 18             | 110            | 7,5            | 53,8           | 48            | 5 |                                                                                                               | GF74682C.0120                                        | GF74622C.0120                                        |
|                                                      | 24      | 3                      | 19,5             | 20             | 123            | 9              | 64,5           | 50            | 5 |                                                                                                               | GF74682C.0124                                        | GF74622C.0124                                        |

**MF**

DIN 13

**VHM**  
Carbide**TIALN**  
86**RH + LH****LH-rot.****L10****Z5****DIN 6535**Zum Anfasen geeignet  
Suitable for chamfering**ZBGF**

new



new

Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

|                  |                  |
|------------------|------------------|
| <b>P</b> 1.1-5.1 | <b>M</b> 1.1-4.1 |
| <b>K</b> 1.1-4.2 | <b>N</b> 1.1-5.3 |

**2,5 x d<sub>1</sub>**

|          | Ø d <sub>1</sub><br>mm |   | P<br>mm | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | ZBGF<br>2,5xd <sub>1</sub><br>L10-1KZ-HA<br>TIALN-86 | ZBGF<br>2,5xd <sub>1</sub><br>L10-1KZ-HB<br>TIALN-86 |
|----------|------------------------|---|---------|------------------------|------------------|----------------|----------------|----------------|----------------|---------------|------------------------------------------------------|------------------------------------------------------|
| <b>M</b> | 8                      | x | 1       | 6,5                    | 8                | 63             | 3              | 21,5           | 36             | 5             | GF74682C.0251                                        | GF74622C.0251                                        |
|          | 10                     | x | 1       | 8,5                    | 10               | 74             | 3              | 26,5           | 40             | 5             | GF74682C.0276                                        | GF74622C.0276                                        |
|          | 10                     | x | 1,25    | 8,13                   | 10               | 74             | 3,8            | 26,9           | 40             | 5             | GF74682C.0277                                        | GF74622C.0277                                        |
|          | 12                     | x | 1       | 10,5                   | 12               | 83             | 3              | 31,5           | 45             | 5             | GF74682C.0301                                        | GF74622C.0301                                        |
|          | 12                     | x | 1,25    | 10,13                  | 12               | 83             | 3,8            | 31,9           | 45             | 5             | GF74682C.0302                                        | GF74622C.0302                                        |
|          | 12                     | x | 1,5     | 9,75                   | 12               | 83             | 4,5            | 32,3           | 45             | 5             | GF74682C.0303                                        | GF74622C.0303                                        |
|          | 14                     | x | 1,5     | 11,75                  | 12               | 85             | 4,5            | 37,3           | 45             | 5             | GF74682C.0331                                        | GF74622C.0331                                        |
|          | 16                     | x | 1,5     | 13,75                  | 14               | 93             | 4,5            | 42,3           | 45             | 5             | GF74682C.0359                                        | GF74622C.0359                                        |

Weitere Ausführungen auf Anfrage  
Further designs upon requestProduct  
Finderv<sub>c</sub> / f<sub>z</sub>

M

MF

UNC

UN, UNS

UNF

UNEF

G, Rp

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör

Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

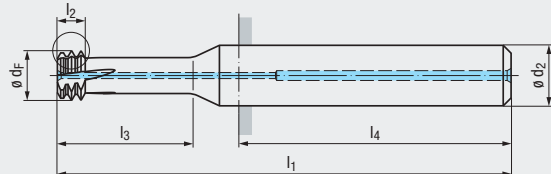
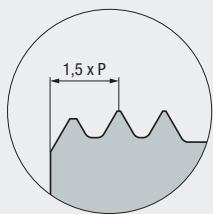
Gigant

MoSys

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |



ASME B1.1



|                                                 |                   |
|-------------------------------------------------|-------------------|
| VHM<br>Carbide                                  | TIALN<br>86       |
| RH + LH                                         | LH-rot.           |
| L10                                             | Z3 - Z5           |
| DIN 6535<br>HA<br>HB                            | $\varnothing d_1$ |
| Zum Anfasen geeignet<br>Suitable for chamfering |                   |

| ZBGF |  |  |
|------|--|--|
|      |  |  |
|      |  |  |

Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 M 1.1-4.1  
K 1.1-4.2 N 1.1-5.3

Gewindetiefe  
Thread depth

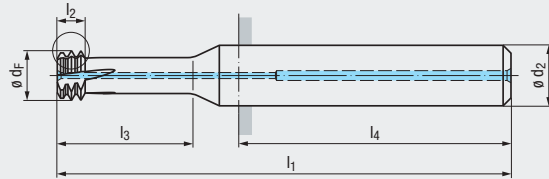
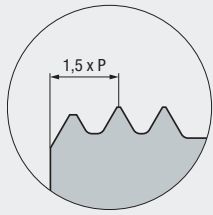
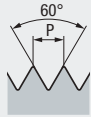
2,5 x d<sub>1</sub>

|       | $\varnothing d_1$<br>inch | P<br>Gg/1" (tpi) | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) | ZBGF<br>2,5xd <sub>1</sub><br>L10-HA<br>TIALN-86 | ZBGF<br>2,5xd <sub>1</sub><br>L10-IKZ-HA<br>TIALN-86 | ZBGF<br>2,5xd <sub>1</sub><br>L10-IKZ-HB<br>TIALN-86 |
|-------|---------------------------|------------------|-------------------------|-------------------|-------|-------|-------|-------|---------------|--------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| Nr. 6 |                           | 32               | 2,45                    | 3                 | 41    | 2,4   | 10    | 28    | 3             | GF74682C.5005                                    |                                                      |                                                      |
| Nr. 8 |                           | 32               | 3,1                     | 4                 | 43    | 2,4   | 11,6  | 28    | 3             | GF74682C.5006                                    |                                                      |                                                      |
| Nr.10 |                           | 24               | 3,37                    | 4                 | 45    | 3,2   | 13,7  | 28    | 3             | GF74682C.5007                                    |                                                      |                                                      |
| 1/4   |                           | 20               | 4,47                    | 6                 | 58    | 3,8   | 17,8  | 36    | 3             |                                                  | GF74682C.5009                                        | GF74622C.5009                                        |
| 5/16  |                           | 18               | 5,89                    | 8                 | 64    | 4,2   | 22    | 36    | 4             |                                                  | GF74682C.5010                                        | GF74622C.5010                                        |
| 3/8   |                           | 16               | 7,21                    | 8                 | 67    | 4,8   | 26,2  | 36    | 4             |                                                  | GF74682C.5011                                        | GF74622C.5011                                        |
| 7/16  |                           | 14               | 8,49                    | 10                | 77    | 5,4   | 30,5  | 40    | 4             |                                                  | GF74682C.5012                                        | GF74622C.5012                                        |
| 1/2   |                           | 13               | 9,82                    | 12                | 85    | 5,9   | 34,7  | 45    | 4             |                                                  | GF74682C.5013                                        | GF74622C.5013                                        |
| 9/16  |                           | 12               | 11,14                   | 12                | 89    | 6,4   | 38,9  | 45    | 5             |                                                  | GF74682C.5014                                        | GF74622C.5014                                        |
| 5/8   |                           | 11               | 12,35                   | 14                | 95    | 6,9   | 43,2  | 45    | 5             |                                                  | GF74682C.5015                                        | GF74622C.5015                                        |
| 3/4   |                           | 10               | 15,23                   | 16                | 106   | 7,6   | 51,4  | 48    | 5             |                                                  | GF74682C.5016                                        | GF74622C.5016                                        |

Weitere Ausführungen auf Anfrage  
Further designs upon request

**UNF**

ASME B1.1

**VHM**  
Carbide**TIALN**  
86**RH + LH****LH-rot.****L10****Z4 - Z5****DIN 6535**Zum Anfasen geeignet  
Suitable for chamfering**ZBGF**

new



new



new

Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

|                  |                  |
|------------------|------------------|
| <b>P</b> 1.1-5.1 | <b>M</b> 1.1-4.1 |
| <b>K</b> 1.1-4.2 | <b>N</b> 1.1-5.3 |

**2,5 x d<sub>1</sub>**

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | ZBGF<br>2,5xd <sub>1</sub><br>L10-HA<br>TIALN-86 | ZBGF<br>2,5xd <sub>1</sub><br>L10-IKZ-HA<br>TIALN-86 | ZBGF<br>2,5xd <sub>1</sub><br>L10-IKZ-HB<br>TIALN-86 |
|--------------------------|------------------|------------------------|------------------|----------------|----------------|----------------|----------------|---------------|--------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| Nr. 6                    | 40               | 2,63                   | 3                | 40             | 1,9            | 9,7            | 28             | 4             | GF74682C.5039                                    |                                                      |                                                      |
| Nr. 8                    | 36               | 3,15                   | 4                | 43             | 2,1            | 11,5           | 28             | 4             | GF74682C.5040                                    |                                                      |                                                      |
| Nr.10                    | 32               | 3,7                    | 4                | 45             | 2,4            | 13,3           | 28             | 4             | GF74682C.5041                                    |                                                      |                                                      |
| 1/4                      | 28               | 5,05                   | 6                | 58             | 2,7            | 17,2           | 36             | 4             |                                                  | GF74682C.5043                                        | GF74622C.5043                                        |
| 5/16                     | 24               | 6,37                   | 8                | 62             | 3,2            | 21,4           | 36             | 5             |                                                  | GF74682C.5044                                        | GF74622C.5044                                        |
| 3/8                      | 24               | 7,97                   | 8                | 65             | 3,2            | 25,4           | 36             | 5             |                                                  | GF74682C.5045                                        | GF74622C.5045                                        |
| 7/16                     | 20               | 9,27                   | 10               | 74             | 3,8            | 29,7           | 40             | 5             |                                                  | GF74682C.5046                                        | GF74622C.5046                                        |
| 1/2                      | 20               | 10,87                  | 12               | 84             | 3,8            | 33,7           | 45             | 5             |                                                  | GF74682C.5047                                        | GF74622C.5047                                        |
| 9/16                     | 18               | 11,9                   | 12               | 87             | 4,2            | 37,8           | 45             | 5             |                                                  | GF74682C.5048                                        | GF74622C.5048                                        |
| 5/8                      | 18               | 13,51                  | 14               | 91             | 4,2            | 41,8           | 45             | 5             |                                                  | GF74682C.5049                                        | GF74622C.5049                                        |
| 3/4                      | 16               | 15,9                   | 16               | 102            | 4,8            | 50             | 48             | 5             |                                                  | GF74682C.5050                                        | GF74622C.5050                                        |

Weitere Ausführungen auf Anfrage  
Further designs upon requestProduct  
Finderv<sub>c</sub> / f<sub>z</sub>

M

MF

UNC

UN, UNS

UNF

UNEF

G, Rp

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör

Accessories

BGF

ZBGF

GSF

GF

GF-VZ

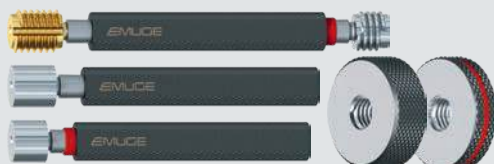
GF-KEG

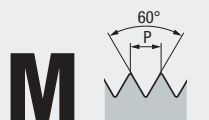
ZGF

ZIRK-GF

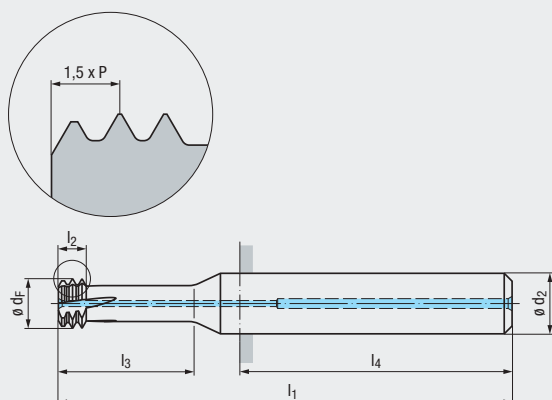
Gigant

MoSys

Gewindelehren  
siehe Seite 541 - 594Thread gauges,  
see page 541 - 594



DIN 13



**VHM  
Carbide**

ALCR  
89

**RH + LH**

LH-rot.

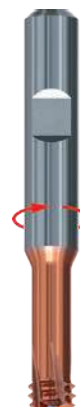
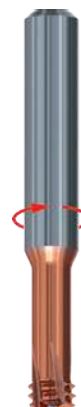
**L10**

## Z4 - Z5

DIN 6535

HA  
HB

**Zum Anfasen geeignet**  
Suitable for chamfering

**ZBGF-S-CUT**

Einsatzgebiete – Material  
Applications – material

▶▶  358

|          |                |          |                |          |                |
|----------|----------------|----------|----------------|----------|----------------|
| <b>P</b> | <b>1.1-5.1</b> | <b>M</b> | <b>1.1-4.1</b> | <b>K</b> | <b>1.1-4.2</b> |
| <b>N</b> | <b>1.1-5.3</b> | <b>S</b> | <b>1.1-2.6</b> |          |                |

Gewindetiefe  
Thread depth

**2 x d<sub>1</sub>**

|   |            |         |            |      |     |     |      |    | Zxq1<br>L10-HA<br>ALCR-89 | Zxq1<br>L10-IKZ-HA<br>ALCR-89 | Zxq1<br>L10-IKZ-HB<br>ALCR-89 |
|---|------------|---------|------------|------|-----|-----|------|----|---------------------------|-------------------------------|-------------------------------|
|   | ø d1<br>mm | P<br>mm | ø dF<br>mm | ø d2 | l1  | l2  | l3   | l4 | Z<br>(Flutes)             |                               |                               |
| M | 3          | 0,5     | 2,25       | 3    | 39  | 1,5 | 6,8  | 28 | 4                         | GF7B682B.0030                 |                               |
|   | 4          | 0,7     | 2,95       | 4    | 42  | 2,1 | 9,1  | 28 | 4                         | GF7B682B.0040                 |                               |
|   | 5          | 0,8     | 3,8        | 6    | 52  | 2,4 | 11,2 | 36 | 4                         |                               | GF7B682B.0050                 |
|   | 6          | 1       | 4,5        | 6    | 55  | 3   | 13,5 | 36 | 4                         |                               | GF7B682B.0060                 |
|   | 8          | 1,25    | 6,13       | 8    | 60  | 3,8 | 17,9 | 36 | 4                         |                               | GF7B682B.0080                 |
|   | 10         | 1,5     | 7,75       | 10   | 70  | 4,5 | 22,3 | 40 | 4                         |                               | GF7B682B.0100                 |
|   | 12         | 1,75    | 9,38       | 10   | 74  | 5,3 | 26,6 | 40 | 5                         |                               | GF7B682B.0112                 |
|   | 14         | 2       | 11         | 12   | 80  | 6   | 31   | 45 | 5                         |                               | GF7B682B.0114                 |
|   | 16         | 2       | 13         | 14   | 85  | 6   | 35   | 45 | 5                         |                               | GF7B682B.0116                 |
|   | 20         | 2,5     | 16,25      | 18   | 100 | 7,5 | 43,8 | 48 | 5                         |                               | GF7B682B.0120                 |
|   | 24         | 3       | 19,5       | 20   | 110 | 9   | 52,5 | 50 | 5                         |                               | GF7B682B.0124                 |

Gewindetiefe  
Thread depth

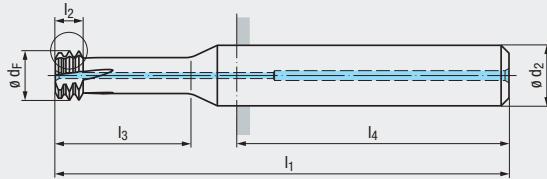
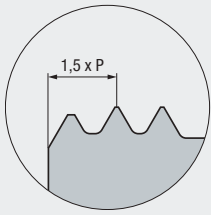
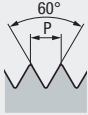
 $2,5 \times d_1$ 

|   | Ø d <sub>1</sub><br>mm | P<br>mm | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-HA<br>ALCR-89 | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-IKZ-HA<br>ALCR-89 | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-IKZ-HB<br>ALCR-89 |
|---|------------------------|---------|------------------------|------------------|----------------|----------------|----------------|----------------|---------------|-------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|
| M | 3                      | 0,5     | 2,25                   | 3                | 39             | 1,5            | 8,3            | 28             | 4             | GF7C682B.0030                                         |                                                           |                                                           |
|   | 4                      | 0,7     | 2,95                   | 4                | 42             | 2,1            | 11,1           | 28             | 4             | GF7C682B.0040                                         |                                                           |                                                           |
|   | 5                      | 0,8     | 3,8                    | 6                | 55             | 2,4            | 13,7           | 36             | 4             |                                                       | GF7C682B.0050                                             | GF7C622B.0050                                             |
|   | 6                      | 1       | 4,5                    | 6                | 58             | 3              | 16,5           | 36             | 4             |                                                       | GF7C682B.0060                                             | GF7C622B.0060                                             |
|   | 8                      | 1,25    | 6,13                   | 8                | 63             | 3,8            | 21,9           | 36             | 4             |                                                       | GF7C682B.0080                                             | GF7C622B.0080                                             |
|   | 10                     | 1,5     | 7,75                   | 10               | 74             | 4,5            | 27,3           | 40             | 4             |                                                       | GF7C682B.0100                                             | GF7C622B.0100                                             |
|   | 12                     | 1,75    | 9,38                   | 10               | 78             | 5,3            | 32,6           | 40             | 5             |                                                       | GF7C682B.0112                                             | GF7C622B.0112                                             |
|   | 14                     | 2       | 11                     | 12               | 88             | 6              | 38             | 45             | 5             |                                                       | GF7C682B.0114                                             | GF7C622B.0114                                             |
|   | 16                     | 2       | 13                     | 14               | 95             | 6              | 43             | 45             | 5             |                                                       | GF7C682B.0116                                             | GF7C622B.0116                                             |
|   | 20                     | 2,5     | 16,25                  | 18               | 110            | 7,5            | 53,8           | 48             | 5             |                                                       | GF7C682B.0120                                             | GF7C622B.0120                                             |
|   | 24                     | 3       | 19,5                   | 20               | 123            | 9              | 64,5           | 50             | 5             |                                                       | GF7C682B.0124                                             | GF7C622B.0124                                             |

Weitere Ausführungen auf Anfrage  
Further designs upon request

**MF**

DIN 13

**VHM**  
Carbide**ALCR**  
89**RH + LH****LH-rot.****L10****Z5****DIN 6535**Zum Anfasen geeignet  
Suitable for chamfering**ZBGF-S-CUT**Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

**P** 1.1-5.1 **M** 1.1-4.1 **K** 1.1-4.2  
**N** 1.1-5.3 **S** 1.1-2.6

**2 x d<sub>1</sub>**

| $\emptyset d_1$<br>mm |   | P<br>mm | $\emptyset d_F$<br>mm | $\emptyset d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) | ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-IKZ-HA<br>ALCR-89 | ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-IKZ-HB<br>ALCR-89 |
|-----------------------|---|---------|-----------------------|-----------------|-------|-------|-------|-------|---------------|---------------------------------------------------------|---------------------------------------------------------|
| <b>M</b> 8            | x | 1       | 6,5                   | 8               | 60    | 3     | 17,5  | 36    | 5             | GF7B682B.0251                                           | GF7B622B.0251                                           |
| 10                    | x | 1       | 8,5                   | 10              | 70    | 3     | 21,5  | 40    | 5             | GF7B682B.0276                                           | GF7B622B.0276                                           |
| 10                    | x | 1,25    | 8,13                  | 10              | 70    | 3,8   | 21,9  | 40    | 5             | GF7B682B.0277                                           | GF7B622B.0277                                           |
| 12                    | x | 1       | 10,5                  | 12              | 80    | 3     | 25,5  | 45    | 5             | GF7B682B.0301                                           | GF7B622B.0301                                           |
| 12                    | x | 1,25    | 10,13                 | 12              | 80    | 3,8   | 25,9  | 45    | 5             | GF7B682B.0302                                           | GF7B622B.0302                                           |
| 12                    | x | 1,5     | 9,75                  | 12              | 80    | 4,5   | 26,3  | 45    | 5             | GF7B682B.0303                                           | GF7B622B.0303                                           |
| 14                    | x | 1,5     | 11,75                 | 12              | 80    | 4,5   | 30,3  | 45    | 5             | GF7B682B.0331                                           | GF7B622B.0331                                           |
| 16                    | x | 1,5     | 13,75                 | 14              | 84    | 4,5   | 34,3  | 45    | 5             | GF7B682B.0359                                           | GF7B622B.0359                                           |

new



new

Gewindetiefe  
Thread depth**2,5 x d<sub>1</sub>**

| $\emptyset d_1$<br>mm |   | P<br>mm | $\emptyset d_F$<br>mm | $\emptyset d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-IKZ-HA<br>ALCR-89 | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-IKZ-HB<br>ALCR-89 |
|-----------------------|---|---------|-----------------------|-----------------|-------|-------|-------|-------|---------------|-----------------------------------------------------------|-----------------------------------------------------------|
| <b>M</b> 8            | x | 1       | 6,5                   | 8               | 63    | 3     | 21,5  | 36    | 5             | GF7C682B.0251                                             | GF7C622B.0251                                             |
| 10                    | x | 1       | 8,5                   | 10              | 74    | 3     | 26,5  | 40    | 5             | GF7C682B.0276                                             | GF7C622B.0276                                             |
| 10                    | x | 1,25    | 8,13                  | 10              | 74    | 3,8   | 26,9  | 40    | 5             | GF7C682B.0277                                             | GF7C622B.0277                                             |
| 12                    | x | 1       | 10,5                  | 12              | 83    | 3     | 31,5  | 45    | 5             | GF7C682B.0301                                             | GF7C622B.0301                                             |
| 12                    | x | 1,25    | 10,13                 | 12              | 83    | 3,8   | 31,9  | 45    | 5             | GF7C682B.0302                                             | GF7C622B.0302                                             |
| 12                    | x | 1,5     | 9,75                  | 12              | 83    | 4,5   | 32,3  | 45    | 5             | GF7C682B.0303                                             | GF7C622B.0303                                             |
| 14                    | x | 1,5     | 11,75                 | 12              | 85    | 4,5   | 37,3  | 45    | 5             | GF7C682B.0331                                             | GF7C622B.0331                                             |
| 16                    | x | 1,5     | 13,75                 | 14              | 93    | 4,5   | 42,3  | 45    | 5             | GF7C682B.0359                                             | GF7C622B.0359                                             |

Weitere Ausführungen auf Anfrage  
Further designs upon requestProduct  
Finder $v_c / f_z$ 

M

MF

UNC

UN, UNS

UNF

UNEF

G, Rp

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör

Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

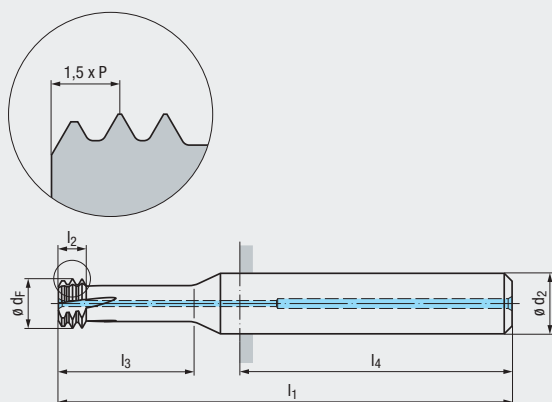
ZIRK-GF

Gigant

MoSys

MoSys

|                    |
|--------------------|
| Product Finder     |
| $v_c / f_z$        |
| M                  |
| MF                 |
| UNC<br>UN, UNS     |
| UNF<br>UNEF        |
| G, Rp              |
| NPT, NPTF<br>Rc, W |
| BSW, BSF           |
| Pg                 |
| MJ<br>UNJC, UNJF   |
| EG (STI)           |



|                                                 |                   |
|-------------------------------------------------|-------------------|
| VHM<br>Carbide                                  | ALCR<br>89        |
| RH + LH                                         | LH-rot.           |
| L10                                             | Z3 - Z5           |
| DIN 6535<br>HA<br>HB                            | $\varnothing d_1$ |
| Zum Anfasen geeignet<br>Suitable for chamfering |                   |

| ZBGF-S-CUT |  |  |
|------------|--|--|
|            |  |  |
|            |  |  |

|                        |
|------------------------|
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

Einsatzgebiete – Material  
Applications – material [» 358](#)

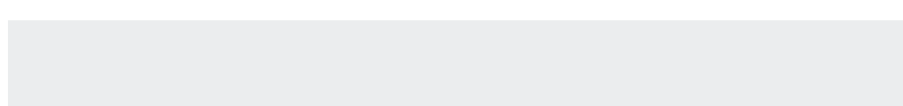
Gewindetiefe  
Thread depth

|           |           |           |
|-----------|-----------|-----------|
| P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 |
| N 1.1-5.3 | S 1.1-2.6 |           |

|        | $\varnothing d_1$<br>inch | P<br>Gg/1" (tpi) | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) |
|--------|---------------------------|------------------|-------------------------|-------------------|-------|-------|-------|-------|---------------|
| BGF    | Nr. 6                     | 32               | 2,45                    | 3                 | 39    | 2,4   | 8,2   | 28    | 3             |
|        | Nr. 8                     | 32               | 3,1                     | 4                 | 40    | 2,4   | 9,5   | 28    | 3             |
| ZBGF   | Nr.10                     | 24               | 3,37                    | 4                 | 42    | 3,2   | 11,2  | 28    | 3             |
|        | 1/4                       | 20               | 4,47                    | 6                 | 55    | 3,8   | 14,6  | 36    | 3             |
| GSF    | 5/16                      | 18               | 5,89                    | 8                 | 62    | 4,2   | 18    | 36    | 4             |
|        | 3/8                       | 16               | 7,21                    | 8                 | 62    | 4,8   | 21,4  | 36    | 4             |
| GF     | 7/16                      | 14               | 8,49                    | 10                | 70    | 5,4   | 25    | 40    | 4             |
|        | 1/2                       | 13               | 9,82                    | 12                | 80    | 5,9   | 28,3  | 45    | 4             |
| GF-VZ  | 9/16                      | 12               | 11,14                   | 12                | 82    | 6,4   | 31,8  | 45    | 5             |
|        | 5/8                       | 11               | 12,35                   | 14                | 87    | 6,9   | 35,2  | 45    | 5             |
| GF-KEG | 3/4                       | 10               | 15,23                   | 16                | 96    | 7,6   | 41,9  | 48    | 5             |

| 2 x d <sub>1</sub>                                  |                                                         |                                                         |
|-----------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-HA<br>ALCR-89 | ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-1KZ-HA<br>ALCR-89 | ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-1KZ-HB<br>ALCR-89 |
| GF7B682B.5005                                       |                                                         |                                                         |
| GF7B682B.5006                                       |                                                         |                                                         |
| GF7B682B.5007                                       |                                                         |                                                         |
|                                                     | GF7B682B.5009                                           | GF7B622B.5009                                           |
|                                                     | GF7B682B.5010                                           | GF7B622B.5010                                           |
|                                                     | GF7B682B.5011                                           | GF7B622B.5011                                           |
|                                                     | GF7B682B.5012                                           | GF7B622B.5012                                           |
|                                                     | GF7B682B.5013                                           | GF7B622B.5013                                           |
|                                                     | GF7B682B.5014                                           | GF7B622B.5014                                           |
|                                                     | GF7B682B.5015                                           | GF7B622B.5015                                           |
|                                                     | GF7B682B.5016                                           | GF7B622B.5016                                           |

|         |
|---------|
| ZGF     |
| ZIRK-GF |
| Gigant  |
| MoSys   |



Gewindetiefe  
Thread depth

| 2,5 x d <sub>1</sub>                                  |                                                           |                                                           |
|-------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|
| ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-HA<br>ALCR-89 | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-1KZ-HA<br>ALCR-89 | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-1KZ-HB<br>ALCR-89 |

|  | $\varnothing d_1$<br>inch | P<br>Gg/1" (tpi) | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) |
|--|---------------------------|------------------|-------------------------|-------------------|-------|-------|-------|-------|---------------|
|  | Nr. 6                     | 32               | 2,45                    | 3                 | 41    | 2,4   | 10    | 28    | 3             |
|  | Nr. 8                     | 32               | 3,1                     | 4                 | 43    | 2,4   | 11,6  | 28    | 3             |
|  | Nr.10                     | 24               | 3,37                    | 4                 | 45    | 3,2   | 13,7  | 28    | 3             |
|  | 1/4                       | 20               | 4,47                    | 6                 | 58    | 3,8   | 17,8  | 36    | 3             |
|  | 5/16                      | 18               | 5,89                    | 8                 | 64    | 4,2   | 22    | 36    | 4             |
|  | 3/8                       | 16               | 7,21                    | 8                 | 67    | 4,8   | 26,2  | 36    | 4             |
|  | 7/16                      | 14               | 8,49                    | 10                | 77    | 5,4   | 30,5  | 40    | 4             |
|  | 1/2                       | 13               | 9,82                    | 12                | 85    | 5,9   | 34,7  | 45    | 4             |
|  | 9/16                      | 12               | 11,14                   | 12                | 89    | 6,4   | 38,9  | 45    | 5             |
|  | 5/8                       | 11               | 12,35                   | 14                | 95    | 6,9   | 43,2  | 45    | 5             |
|  | 3/4                       | 10               | 15,23                   | 16                | 106   | 7,6   | 51,4  | 48    | 5             |

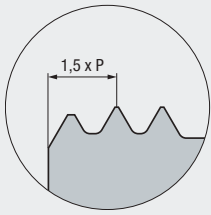
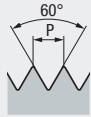
|               |               |               |
|---------------|---------------|---------------|
| GF7C682B.5005 |               |               |
| GF7C682B.5006 |               |               |
| GF7C682B.5007 |               |               |
|               | GF7C682B.5009 | GF7C622B.5009 |
|               | GF7C682B.5010 | GF7C622B.5010 |
|               | GF7C682B.5011 | GF7C622B.5011 |
|               | GF7C682B.5012 | GF7C622B.5012 |
|               | GF7C682B.5013 | GF7C622B.5013 |
|               | GF7C682B.5014 | GF7C622B.5014 |
|               | GF7C682B.5015 | GF7C622B.5015 |
|               | GF7C682B.5016 | GF7C622B.5016 |

Weitere Ausführungen auf Anfrage  
Further designs upon request



**UNF**

ASME B1.1

**VHM**  
Carbide**ALCR**  
89**RH + LH****LH-rot.****L10****Z4 - Z5****DIN 6535**Zum Anfasen geeignet  
Suitable for chamfering**ZBGF-S-CUT**Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

**P** 1.1-5.1 **M** 1.1-4.1 **K** 1.1-4.2  
**N** 1.1-5.3 **S** 1.1-2.6

**2 x d<sub>1</sub>**

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-HA<br>ALCR-89 | ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-IKZ-HA<br>ALCR-89 | ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-IKZ-HB<br>ALCR-89 |
|--------------------------|------------------|------------------------|------------------|----------------|----------------|----------------|----------------|---------------|-----------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| Nr. 6                    | 40               | 2,63                   | 3                | 39             | 1,9            | 8              | 28             | 4             | GF7B682B.5039                                       |                                                         |                                                         |
| Nr. 8                    | 36               | 3,15                   | 4                | 40             | 2,1            | 9,4            | 28             | 4             | GF7B682B.5040                                       |                                                         |                                                         |
| Nr.10                    | 32               | 3,7                    | 4                | 42             | 2,4            | 10,8           | 28             | 4             | GF7B682B.5041                                       |                                                         |                                                         |
| 1/4                      | 28               | 5,05                   | 6                | 55             | 2,7            | 14,1           | 36             | 4             |                                                     | GF7B682B.5043                                           | GF7B622B.5043                                           |
| 5/16                     | 24               | 6,37                   | 8                | 58             | 3,2            | 17,5           | 36             | 5             |                                                     | GF7B682B.5044                                           | GF7B622B.5044                                           |
| 3/8                      | 24               | 7,97                   | 8                | 62             | 3,2            | 20,6           | 36             | 5             |                                                     | GF7B682B.5045                                           | GF7B622B.5045                                           |
| 7/16                     | 20               | 9,27                   | 10               | 70             | 3,8            | 24,1           | 40             | 5             |                                                     | GF7B682B.5046                                           | GF7B622B.5046                                           |
| 1/2                      | 20               | 10,87                  | 12               | 80             | 3,8            | 27,3           | 45             | 5             |                                                     | GF7B682B.5047                                           | GF7B622B.5047                                           |
| 9/16                     | 18               | 11,9                   | 12               | 80             | 4,2            | 30,7           | 45             | 5             |                                                     | GF7B682B.5048                                           | GF7B622B.5048                                           |
| 5/8                      | 18               | 13,51                  | 14               | 83             | 4,2            | 33,9           | 45             | 5             |                                                     | GF7B682B.5049                                           | GF7B622B.5049                                           |
| 3/4                      | 16               | 15,9                   | 16               | 93             | 4,8            | 40,5           | 48             | 5             |                                                     | GF7B682B.5050                                           | GF7B622B.5050                                           |

neu



neu



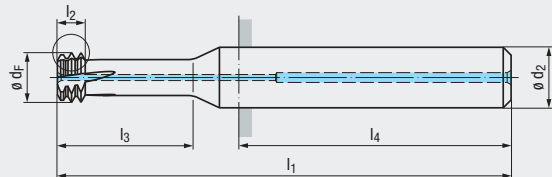
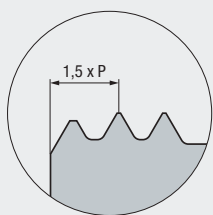
neu

Gewindetiefe  
Thread depth**2,5 x d<sub>1</sub>**

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-HA<br>ALCR-89 | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-IKZ-HA<br>ALCR-89 | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-IKZ-HB<br>ALCR-89 |
|--------------------------|------------------|------------------------|------------------|----------------|----------------|----------------|----------------|---------------|-------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|
| Nr. 6                    | 40               | 2,63                   | 3                | 40             | 1,9            | 9,7            | 28             | 4             | GF7C682B.5039                                         |                                                           |                                                           |
| Nr. 8                    | 36               | 3,15                   | 4                | 43             | 2,1            | 11,5           | 28             | 4             | GF7C682B.5040                                         |                                                           |                                                           |
| Nr.10                    | 32               | 3,7                    | 4                | 45             | 2,4            | 13,3           | 28             | 4             | GF7C682B.5041                                         |                                                           |                                                           |
| 1/4                      | 28               | 5,05                   | 6                | 58             | 2,7            | 17,2           | 36             | 4             |                                                       | GF7C682B.5043                                             | GF7C622B.5043                                             |
| 5/16                     | 24               | 6,37                   | 8                | 62             | 3,2            | 21,4           | 36             | 5             |                                                       | GF7C682B.5044                                             | GF7C622B.5044                                             |
| 3/8                      | 24               | 7,97                   | 8                | 65             | 3,2            | 25,4           | 36             | 5             |                                                       | GF7C682B.5045                                             | GF7C622B.5045                                             |
| 7/16                     | 20               | 9,27                   | 10               | 74             | 3,8            | 29,7           | 40             | 5             |                                                       | GF7C682B.5046                                             | GF7C622B.5046                                             |
| 1/2                      | 20               | 10,87                  | 12               | 84             | 3,8            | 33,7           | 45             | 5             |                                                       | GF7C682B.5047                                             | GF7C622B.5047                                             |
| 9/16                     | 18               | 11,9                   | 12               | 87             | 4,2            | 37,8           | 45             | 5             |                                                       | GF7C682B.5048                                             | GF7C622B.5048                                             |
| 5/8                      | 18               | 13,51                  | 14               | 91             | 4,2            | 41,8           | 45             | 5             |                                                       | GF7C682B.5049                                             | GF7C622B.5049                                             |
| 3/4                      | 16               | 15,9                   | 16               | 102            | 4,8            | 50             | 48             | 5             |                                                       | GF7C682B.5050                                             | GF7C622B.5050                                             |

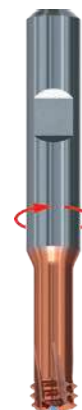
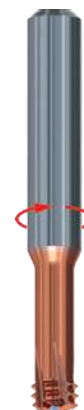
Weitere Ausführungen auf Anfrage  
Further designs upon request

|                         |
|-------------------------|
| Product Finder          |
| $v_c / f_z$             |
| M                       |
| MF                      |
| UNC<br>UN, UNS          |
| UNF<br>UNEF             |
| G, Rp                   |
| NPT, NPTF<br>Rc, W      |
| BSW, BSF                |
| Pg                      |
| <b>MJ</b><br>UNJC, UNJF |
| EG (STI)                |



|                                                 |                   |
|-------------------------------------------------|-------------------|
| <b>VHM</b><br>Carbide                           | <b>ALCR</b><br>89 |
| <b>RH + LH</b>                                  | <b>LH-rot.</b>    |
| <b>L10</b>                                      | <b>Z4 - Z5</b>    |
| <b>DIN 6535</b><br>HA<br>HB                     | $\varnothing d_1$ |
| Zum Anfasen geeignet<br>Suitable for chamfering |                   |

### ZBGF-S-CUT



Einsatzgebiete – Material  
Applications – material



|                  |                  |                  |
|------------------|------------------|------------------|
| <b>P</b> 1.1-5.1 | <b>M</b> 1.1-4.1 | <b>K</b> 1.1-4.2 |
| <b>N</b> 1.1-5.3 | <b>S</b> 1.1-2.6 |                  |

Gewindetiefe  
Thread depth

## 2 x d<sub>1</sub>

|         |
|---------|
| BGF     |
| ZBGF    |
| GSF     |
| GF      |
| GF-VZ   |
| GF-KEG  |
| ZGF     |
| ZIRK-GF |
| Gigant  |
| MoSys   |

|           | $\varnothing d_1$<br>mm |   | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) | ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-HA<br>ALCR-89 | ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-IKZ-HA<br>ALCR-89 | ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-IKZ-HB<br>ALCR-89 |
|-----------|-------------------------|---|---------|-------------------------|-------------------|-------|-------|-------|-------|---------------|-----------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| <b>MJ</b> | 3                       | x | 0,5     | 2,25                    | 3                 | 39    | 1,5   | 6,8   | 28    | 4             | GF7B682B.1229                                       |                                                         |                                                         |
|           | 4                       | x | 0,7     | 2,95                    | 4                 | 42    | 2,1   | 9,1   | 28    | 4             | GF7B682B.1231                                       |                                                         |                                                         |
|           | 5                       | x | 0,8     | 3,8                     | 6                 | 52    | 2,4   | 11,2  | 36    | 4             |                                                     | GF7B682B.1232                                           | GF7B622B.1232                                           |
|           | 6                       | x | 1       | 4,5                     | 6                 | 55    | 3     | 13,5  | 36    | 4             |                                                     | GF7B682B.1233                                           | GF7B622B.1233                                           |
|           | 8                       | x | 1       | 6,5                     | 8                 | 60    | 3     | 17,5  | 36    | 5             |                                                     | GF7B682B.1235                                           | GF7B622B.1235                                           |
|           | 8                       | x | 1,25    | 6,13                    | 8                 | 60    | 3,8   | 17,9  | 36    | 4             |                                                     | GF7B682B.2026                                           | GF7B622B.2026                                           |
|           | 10                      | x | 1       | 8,5                     | 10                | 70    | 3     | 21,5  | 40    | 5             |                                                     | GF7B682B.1764                                           | GF7B622B.1764                                           |
|           | 10                      | x | 1,25    | 8,13                    | 10                | 70    | 3,8   | 21,9  | 40    | 5             |                                                     | GF7B682B.1236                                           | GF7B622B.1236                                           |
|           | 10                      | x | 1,5     | 7,75                    | 10                | 70    | 4,5   | 22,3  | 40    | 4             |                                                     | GF7B682B.2308                                           | GF7B622B.2308                                           |
|           | 12                      | x | 1       | 10,5                    | 12                | 80    | 3     | 25,5  | 45    | 5             |                                                     | GF7B682B.2310                                           | GF7B622B.2310                                           |
|           | 12                      | x | 1,25    | 10,13                   | 12                | 80    | 3,8   | 25,9  | 45    | 5             |                                                     | GF7B682B.1237                                           | GF7B622B.1237                                           |
|           | 12                      | x | 1,5     | 9,75                    | 12                | 80    | 4,5   | 26,3  | 45    | 5             |                                                     | GF7B682B.2056                                           | GF7B622B.2056                                           |
|           | 12                      | x | 1,75    | 9,38                    | 10                | 74    | 5,3   | 26,6  | 40    | 5             |                                                     | GF7B682B.1912                                           | GF7B622B.1912                                           |
|           | 14                      | x | 1,5     | 11,75                   | 12                | 80    | 4,5   | 30,3  | 45    | 5             |                                                     | GF7B682B.1238                                           | GF7B622B.1238                                           |
|           | 14                      | x | 2       | 11                      | 12                | 80    | 6     | 31    | 45    | 5             |                                                     | GF7B682B.2505                                           | GF7B622B.2505                                           |
|           | 16                      | x | 1,5     | 13,75                   | 14                | 84    | 4,5   | 34,3  | 45    | 5             |                                                     | GF7B682B.1239                                           | GF7B622B.1239                                           |
|           | 16                      | x | 2       | 13                      | 14                | 85    | 6     | 35    | 45    | 5             |                                                     | GF7B682B.1955                                           | GF7B622B.1955                                           |
|           | 20                      | x | 2,5     | 16,25                   | 18                | 100   | 7,5   | 43,8  | 48    | 5             |                                                     | GF7B682B.1954                                           | GF7B622B.1954                                           |
|           | 24                      | x | 3       | 19,5                    | 20                | 110   | 9     | 52,5  | 50    | 5             |                                                     | GF7B682B.9222                                           | GF7B622B.9222                                           |

neu



neu



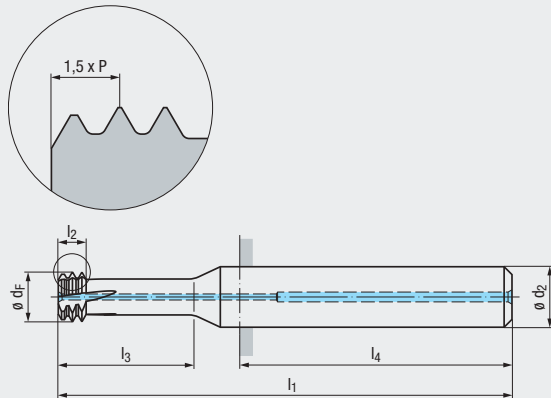
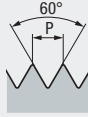
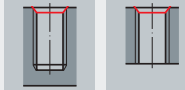
neu



Gewindetiefe  
Thread depth

## 2,5 x d<sub>1</sub>

|           | $\varnothing d_1$<br>mm |   | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-HA<br>ALCR-89 | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-IKZ-HA<br>ALCR-89 | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-IKZ-HB<br>ALCR-89 |
|-----------|-------------------------|---|---------|-------------------------|-------------------|-------|-------|-------|-------|---------------|-------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|
| <b>MJ</b> | 3                       | x | 0,5     | 2,25                    | 3                 | 39    | 1,5   | 8,3   | 28    | 4             | GF7C682B.1229                                         |                                                           |                                                           |
|           | 4                       | x | 0,7     | 2,95                    | 4                 | 42    | 2,1   | 11,1  | 28    | 4             | GF7C682B.1231                                         |                                                           |                                                           |
|           | 5                       | x | 0,8     | 3,8                     | 6                 | 55    | 2,4   | 13,7  | 36    | 4             |                                                       | GF7C682B.1232                                             | GF7C622B.1232                                             |
|           | 6                       | x | 1       | 4,5                     | 6                 | 58    | 3     | 16,5  | 36    | 4             |                                                       | GF7C682B.1233                                             | GF7C622B.1233                                             |
|           | 8                       | x | 1       | 6,5                     | 8                 | 63    | 3     | 21,5  | 36    | 5             |                                                       | GF7C682B.1235                                             | GF7C622B.1235                                             |
|           | 8                       | x | 1,25    | 6,13                    | 8                 | 63    | 3,8   | 21,9  | 36    | 4             |                                                       | GF7C682B.2026                                             | GF7C622B.2026                                             |
|           | 10                      | x | 1       | 8,5                     | 10                | 74    | 3     | 26,5  | 40    | 5             |                                                       | GF7C682B.1764                                             | GF7C622B.1764                                             |
|           | 10                      | x | 1,25    | 8,13                    | 10                | 74    | 3,8   | 26,9  | 40    | 5             |                                                       | GF7C682B.1236                                             | GF7C622B.1236                                             |
|           | 10                      | x | 1,5     | 7,75                    | 10                | 74    | 4,5   | 27,3  | 40    | 4             |                                                       | GF7C682B.2308                                             | GF7C622B.2308                                             |
|           | 12                      | x | 1       | 10,5                    | 12                | 83    | 3     | 31,5  | 45    | 5             |                                                       | GF7C682B.2310                                             | GF7C622B.2310                                             |
|           | 12                      | x | 1,25    | 10,13                   | 12                | 83    | 3,8   | 31,9  | 45    | 5             |                                                       | GF7C682B.1237                                             | GF7C622B.1237                                             |
|           | 12                      | x | 1,5     | 9,75                    | 12                | 83    | 4,5   | 32,3  | 45    | 5             |                                                       | GF7C682B.2056                                             | GF7C622B.2056                                             |
|           | 12                      | x | 1,75    | 9,38                    | 10                | 78    | 5,3   | 32,6  | 40    | 5             |                                                       | GF7C682B.1912                                             | GF7C622B.1912                                             |
|           | 14                      | x | 1,5     | 11,75                   | 12                | 85    | 4,5   | 37,3  | 45    | 5             |                                                       | GF7C682B.1238                                             | GF7C622B.1238                                             |
|           | 14                      | x | 2       | 11                      | 12                | 88    | 6     | 38    | 45    | 5             |                                                       | GF7C682B.2505                                             | GF7C622B.2505                                             |
|           | 16                      | x | 1,5     | 13,75                   | 14                | 93    | 4,5   | 42,3  | 45    | 5             |                                                       | GF7C682B.1239                                             | GF7C622B.1239                                             |
|           | 16                      | x | 2       | 13                      | 14                | 95    | 6     | 43    | 45    | 5             |                                                       | GF7C682B.1955                                             | GF7C622B.1955                                             |
|           | 20                      | x | 2,5     | 16,25                   | 18                | 110   | 7,5   | 53,8  | 48    | 5             |                                                       | GF7C682B.1954                                             | GF7C622B.1954                                             |
|           | 24                      | x | 3       | 19,5                    | 20                | 123   | 9     | 64,5  | 50    | 5             |                                                       | GF7C682B.9222                                             | GF7C622B.9222                                             |

**UNJC**ASME B1.1 <sup>1)</sup>**VHM**  
Carbide**ALCR**  
89**RH + LH****LH-rot.****L10****Z3 - Z5****DIN 6535**Zum Anfasen geeignet  
Suitable for chamfering**ZBGF-S-CUT**Einsatzgebiete – Material  
Applications – material

» 358

**P** 1.1-5.1  
**N** 1.1-5.3**M** 1.1-4.1  
**S** 1.1-2.6**K** 1.1-4.2Gewindetiefe  
Thread depth**2 x d<sub>1</sub>**

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-HA<br>ALCR-89 | ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-IKZ-HA<br>ALCR-89 | ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-IKZ-HB<br>ALCR-89 |
|--------------------------|------------------|------------------------|------------------|----------------|----------------|----------------|----------------|---------------|-----------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| Nr. 6                    | 32               | 2,45                   | 3                | 39             | 2,4            | 8,2            | 28             | 3             | GF7B682B.5481                                       |                                                         |                                                         |
| Nr. 8                    | 32               | 3,1                    | 4                | 40             | 2,4            | 9,5            | 28             | 3             | GF7B682B.5482                                       |                                                         |                                                         |
| Nr.10                    | 24               | 3,37                   | 4                | 42             | 3,2            | 11,2           | 28             | 3             | GF7B682B.5483                                       |                                                         |                                                         |
| 1/4                      | 20               | 4,47                   | 6                | 55             | 3,8            | 14,6           | 36             | 3             |                                                     | GF7B682B.5485                                           | GF7B622B.5485                                           |
| 5/16                     | 18               | 5,89                   | 8                | 62             | 4,2            | 18             | 36             | 4             |                                                     | GF7B682B.5486                                           | GF7B622B.5486                                           |
| 3/8                      | 16               | 7,21                   | 8                | 62             | 4,8            | 21,4           | 36             | 4             |                                                     | GF7B682B.5487                                           | GF7B622B.5487                                           |
| 7/16                     | 14               | 8,49                   | 10               | 70             | 5,4            | 25             | 40             | 4             |                                                     | GF7B682B.5488                                           | GF7B622B.5488                                           |
| 1/2                      | 13               | 9,82                   | 12               | 80             | 5,9            | 28,3           | 45             | 4             |                                                     | GF7B682B.5489                                           | GF7B622B.5489                                           |
| 9/16                     | 12               | 11,14                  | 12               | 82             | 6,4            | 31,8           | 45             | 5             |                                                     | GF7B682B.5490                                           | GF7B622B.5490                                           |
| 5/8                      | 11               | 12,35                  | 14               | 87             | 6,9            | 35,2           | 45             | 5             |                                                     | GF7B682B.5491                                           | GF7B622B.5491                                           |
| 3/4                      | 10               | 15,23                  | 16               | 96             | 7,6            | 41,9           | 48             | 5             |                                                     | GF7B682B.5492                                           | GF7B622B.5492                                           |

Gewindetiefe  
Thread depth**2,5 x d<sub>1</sub>**

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-HA<br>ALCR-89 | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-IKZ-HA<br>ALCR-89 | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-IKZ-HB<br>ALCR-89 |
|--------------------------|------------------|------------------------|------------------|----------------|----------------|----------------|----------------|---------------|-------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|
| Nr. 6                    | 32               | 2,45                   | 3                | 41             | 2,4            | 10             | 28             | 3             | GF7C682B.5481                                         |                                                           |                                                           |
| Nr. 8                    | 32               | 3,1                    | 4                | 43             | 2,4            | 11,6           | 28             | 3             | GF7C682B.5482                                         |                                                           |                                                           |
| Nr.10                    | 24               | 3,37                   | 4                | 45             | 3,2            | 13,7           | 28             | 3             | GF7C682B.5483                                         |                                                           |                                                           |
| 1/4                      | 20               | 4,47                   | 6                | 58             | 3,8            | 17,8           | 36             | 3             |                                                       | GF7C682B.5485                                             | GF7C622B.5485                                             |
| 5/16                     | 18               | 5,89                   | 8                | 64             | 4,2            | 22             | 36             | 4             |                                                       | GF7C682B.5486                                             | GF7C622B.5486                                             |
| 3/8                      | 16               | 7,21                   | 8                | 67             | 4,8            | 26,2           | 36             | 4             |                                                       | GF7C682B.5487                                             | GF7C622B.5487                                             |
| 7/16                     | 14               | 8,49                   | 10               | 77             | 5,4            | 30,5           | 40             | 4             |                                                       | GF7C682B.5488                                             | GF7C622B.5488                                             |
| 1/2                      | 13               | 9,82                   | 12               | 85             | 5,9            | 34,7           | 45             | 4             |                                                       | GF7C682B.5489                                             | GF7C622B.5489                                             |
| 9/16                     | 12               | 11,14                  | 12               | 89             | 6,4            | 38,9           | 45             | 5             |                                                       | GF7C682B.5490                                             | GF7C622B.5490                                             |
| 5/8                      | 11               | 12,35                  | 14               | 95             | 6,9            | 43,2           | 45             | 5             |                                                       | GF7C682B.5491                                             | GF7C622B.5491                                             |
| 3/4                      | 10               | 15,23                  | 16               | 106            | 7,6            | 51,4           | 48             | 5             |                                                       | GF7C682B.5492                                             | GF7C622B.5492                                             |

1) früher ASME B1.15  
formerly ASME B1.15Weitere Ausführungen auf Anfrage  
Further designs upon requestProduct  
Finderv<sub>c</sub> / f<sub>z</sub>

M

MF

UNC  
UN, UNSUNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

M.J  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

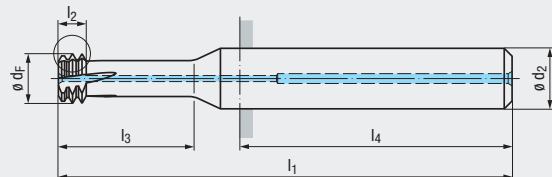
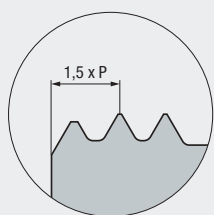
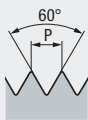
MoSys



|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |

# UNJF

ASME B1.1 1)



VHM  
Carbide

ALCR  
89

RH + LH

LH-rot.

L10

Z4 - Z5

DIN 6535

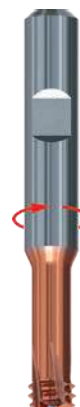
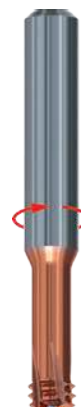
HA  
HB

$\phi d_1$

Zum Anfasen geeignet  
Suitable for chamfering



ZBGF-S-CUT



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6

Gewindetiefe  
Thread depth

2 x  $d_1$

| $\phi d_1$<br>inch | P<br>Gg/1" (tpi) | $\phi d_F$<br>mm | $\phi d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) |
|--------------------|------------------|------------------|------------|-------|-------|-------|-------|---------------|
| Nr. 6              | 40               | 2,63             | 3          | 39    | 1,9   | 8     | 28    | 4             |
| Nr. 8              | 36               | 3,15             | 4          | 40    | 2,1   | 9,4   | 28    | 4             |
| Nr.10              | 32               | 3,7              | 4          | 42    | 2,4   | 10,8  | 28    | 4             |
| 1/4                | 28               | 5,05             | 6          | 55    | 2,7   | 14,1  | 36    | 4             |
| 5/16               | 24               | 6,37             | 8          | 58    | 3,2   | 17,5  | 36    | 5             |
| 3/8                | 24               | 7,97             | 8          | 62    | 3,2   | 20,6  | 36    | 5             |
| 7/16               | 20               | 9,27             | 10         | 70    | 3,8   | 24,1  | 40    | 5             |
| 1/2                | 20               | 10,87            | 12         | 80    | 3,8   | 27,3  | 45    | 5             |
| 9/16               | 18               | 11,9             | 12         | 80    | 4,2   | 30,7  | 45    | 5             |
| 5/8                | 18               | 13,51            | 14         | 83    | 4,2   | 33,9  | 45    | 5             |
| 3/4                | 16               | 15,9             | 16         | 93    | 4,8   | 40,5  | 48    | 5             |

| ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-HA<br>ALCR-89 | ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-1KZ-HA<br>ALCR-89                                                                              | ZBGF-S-CUT<br>2xd <sub>1</sub><br>L10-1KZ-HB<br>ALCR-89                                                                              |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| GF7B682B.5507<br>GF7B682B.5508<br>GF7B682B.5509     |                                                                                                                                      |                                                                                                                                      |
|                                                     | GF7B682B.5511<br>GF7B682B.5512<br>GF7B682B.5513<br>GF7B682B.5514<br>GF7B682B.5515<br>GF7B682B.5516<br>GF7B682B.5517<br>GF7B682B.5518 | GF7B622B.5511<br>GF7B622B.5512<br>GF7B622B.5513<br>GF7B622B.5514<br>GF7B622B.5515<br>GF7B622B.5516<br>GF7B622B.5517<br>GF7B622B.5518 |

Gewindetiefe  
Thread depth

2,5 x  $d_1$

| $\phi d_1$<br>inch | P<br>Gg/1" (tpi) | $\phi d_F$<br>mm | $\phi d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) |
|--------------------|------------------|------------------|------------|-------|-------|-------|-------|---------------|
| Nr. 6              | 40               | 2,63             | 3          | 40    | 1,9   | 9,7   | 28    | 4             |
| Nr. 8              | 36               | 3,15             | 4          | 43    | 2,1   | 11,5  | 28    | 4             |
| Nr.10              | 32               | 3,7              | 4          | 45    | 2,4   | 13,3  | 28    | 4             |
| 1/4                | 28               | 5,05             | 6          | 58    | 2,7   | 17,2  | 36    | 4             |
| 5/16               | 24               | 6,37             | 8          | 62    | 3,2   | 21,4  | 36    | 5             |
| 3/8                | 24               | 7,97             | 8          | 65    | 3,2   | 25,4  | 36    | 5             |
| 7/16               | 20               | 9,27             | 10         | 74    | 3,8   | 29,7  | 40    | 5             |
| 1/2                | 20               | 10,87            | 12         | 84    | 3,8   | 33,7  | 45    | 5             |
| 9/16               | 18               | 11,9             | 12         | 87    | 4,2   | 37,8  | 45    | 5             |
| 5/8                | 18               | 13,51            | 14         | 91    | 4,2   | 41,8  | 45    | 5             |
| 3/4                | 16               | 15,9             | 16         | 102   | 4,8   | 50    | 48    | 5             |

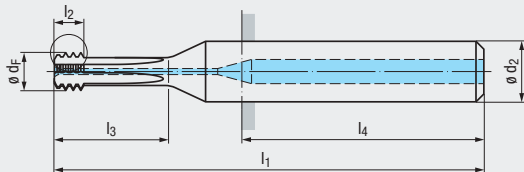
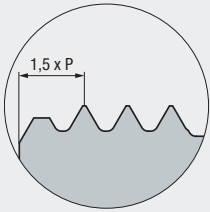
| ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-HA<br>ALCR-89 | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-1KZ-HA<br>ALCR-89                                                                            | ZBGF-S-CUT<br>2,5xd <sub>1</sub><br>L10-1KZ-HB<br>ALCR-89                                                                            |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| GF7C682B.5507<br>GF7C682B.5508<br>GF7C682B.5509       |                                                                                                                                      |                                                                                                                                      |
|                                                       | GF7C682B.5511<br>GF7C682B.5512<br>GF7C682B.5513<br>GF7C682B.5514<br>GF7C682B.5515<br>GF7C682B.5516<br>GF7C682B.5517<br>GF7C682B.5518 | GF7C622B.5511<br>GF7C622B.5512<br>GF7C622B.5513<br>GF7C622B.5514<br>GF7C622B.5515<br>GF7C622B.5516<br>GF7C622B.5517<br>GF7C622B.5518 |

1) früher ASME B1.15  
formerly ASME B1.15

Weitere Ausführungen auf Anfrage  
Further designs upon request

**M**

DIN 13

**VHM**  
Carbide**TIALN**  
T46**RH + LH****LH-rot.****Z4 - Z5****DIN 6535**Zum Anfasen geeignet  
Suitable for chamfering**ZBGF-HCUT**

new



new

Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth**N** 2.7-2.8**H** 1.1-1.5**2 x d<sub>1</sub>**

|          | Ø d <sub>1</sub><br>mm | P<br>mm | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | ZBGF-HCUT<br>2xd <sub>1</sub><br>HA<br>TIALN-T46 | ZBGF-HCUT<br>2xd <sub>1</sub><br>IKZ-HA<br>TIALN-T46 |
|----------|------------------------|---------|------------------------|------------------|----------------|----------------|----------------|----------------|---------------|--------------------------------------------------|------------------------------------------------------|
| <b>M</b> | 3                      | 0,5     | 2,3                    | 6                | 51             | 2              | 7              | 36             | 4             | GF733709.0030                                    |                                                      |
|          | 4                      | 0,7     | 3                      | 6                | 51             | 2,8            | 9,4            | 36             | 4             | GF733709.0040                                    |                                                      |
|          | 5                      | 0,8     | 3,8                    | 6                | 53             | 3,2            | 11,6           | 36             | 4             | GF733709.0050                                    |                                                      |
|          | 6                      | 1       | 4,6                    | 6                | 55             | 4              | 14             | 36             | 4             |                                                  | GF733709.0060                                        |
|          | 8                      | 1,25    | 6,2                    | 8                | 60             | 5              | 18,5           | 36             | 4             |                                                  | GF733709.0080                                        |
|          | 10                     | 1,5     | 7,8                    | 8                | 64             | 6              | 23             | 36             | 4             |                                                  | GF733709.0100                                        |
|          | 12                     | 1,75    | 9,5                    | 10               | 74             | 7              | 27,5           | 40             | 4             |                                                  | GF733709.0112                                        |
|          | 14                     | 2       | 11,1                   | 12               | 83             | 8              | 32             | 45             | 4             |                                                  | GF733709.0114                                        |
|          | 16                     | 2       | 13,1                   | 14               | 88             | 8              | 36             | 45             | 5             |                                                  | GF733709.0116                                        |

Gewindetiefe  
Thread depth

|          | Ø d <sub>1</sub><br>mm | P<br>mm | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | ZBGF-HCUT<br>2,5xd <sub>1</sub><br>HA<br>TIALN-T46 | ZBGF-HCUT<br>2,5xd <sub>1</sub><br>IKZ-HA<br>TIALN-T46 |
|----------|------------------------|---------|------------------------|------------------|----------------|----------------|----------------|----------------|---------------|----------------------------------------------------|--------------------------------------------------------|
| <b>M</b> | 3                      | 0,5     | 2,3                    | 6                | 51             | 2              | 8,5            | 36             | 4             | GF743709.0030                                      |                                                        |
|          | 4                      | 0,7     | 3                      | 6                | 55             | 2,8            | 11,4           | 36             | 4             | GF743709.0040                                      |                                                        |
|          | 5                      | 0,8     | 3,8                    | 6                | 55             | 3,2            | 14,1           | 36             | 4             | GF743709.0050                                      |                                                        |
|          | 6                      | 1       | 4,6                    | 6                | 58             | 4              | 17             | 36             | 4             |                                                    | GF743709.0060                                          |
|          | 8                      | 1,25    | 6,2                    | 8                | 65             | 5              | 22,5           | 36             | 4             |                                                    | GF743709.0080                                          |
|          | 10                     | 1,5     | 7,8                    | 8                | 68             | 6              | 28             | 36             | 4             |                                                    | GF743709.0100                                          |
|          | 12                     | 1,75    | 9,5                    | 10               | 78             | 7              | 33,5           | 40             | 4             |                                                    | GF743709.0112                                          |
|          | 14                     | 2       | 11,1                   | 12               | 90             | 8              | 39             | 45             | 4             |                                                    | GF743709.0114                                          |
|          | 16                     | 2       | 13,1                   | 14               | 95             | 8              | 44             | 45             | 5             |                                                    | GF743709.0116                                          |

Weitere Ausführungen auf Anfrage  
Further designs upon requestProduct  
Finderv<sub>c</sub> / f<sub>z</sub>**M**

MF

UNC  
UN, UNSUNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

**ZBGF**

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

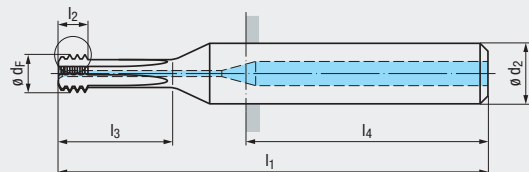
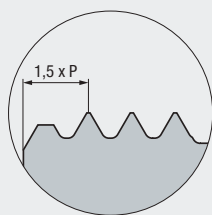
MoSys

Gewinde-Tiefenlehrrdorne  
siehe Seite 588 - 591Thread depth plug gauges,  
see page 588 - 591

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

# UNC

ASME B1.1



|                                                  |              |
|--------------------------------------------------|--------------|
| VHM<br>Carbide                                   | TIALN<br>T46 |
| RH + LH                                          | LH-rot.      |
| DIN 6535<br>HA                                   | Z3 - Z5      |
| Zum Anfassen geeignet<br>Suitable for chamfering |              |

| ZBGF-HCUT |  |
|-----------|--|
|           |  |
|           |  |

Einsatzgebiete – Material  
Applications – material

» 358

N 2.7-2.8

H 1.1-1.5

Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

|       | $\emptyset d_1$<br>inch | P<br>Gg/1" (tpi) | $\emptyset d_F$<br>mm | $\emptyset d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) |
|-------|-------------------------|------------------|-----------------------|-----------------|-------|-------|-------|-------|---------------|
| Nr.10 |                         | 24               | 3,3                   | 6               | 55    | 4,2   | 11,8  | 36    | 3             |
| 1/4   |                         | 20               | 4,5                   | 6               | 56    | 5,1   | 15,2  | 36    | 3             |
| 5/16  |                         | 18               | 5,9                   | 6               | 58    | 5,6   | 18,7  | 36    | 4             |
| 3/8   |                         | 16               | 7,2                   | 8               | 64    | 6,4   | 22,2  | 36    | 4             |
| 7/16  |                         | 14               | 8,5                   | 10              | 72    | 7,3   | 25,9  | 40    | 4             |
| 1/2   |                         | 13               | 9,9                   | 10              | 74    | 7,8   | 29,3  | 40    | 4             |
| 5/8   |                         | 11               | 12,5                  | 14              | 88    | 9,2   | 36,4  | 45    | 4             |
| 3/4   |                         | 10               | 15,4                  | 16              | 98    | 10,2  | 43,2  | 48    | 5             |

| ZBGF-HCUT<br>2xd <sub>1</sub><br>HA<br>TIALN-T46 | ZBGF-HCUT<br>2xd <sub>1</sub><br>IKZ-HA<br>TIALN-T46 |
|--------------------------------------------------|------------------------------------------------------|
| GF733709.5007                                    |                                                      |
| GF733709.5009                                    |                                                      |
|                                                  | GF733709.5010                                        |
|                                                  | GF733709.5011                                        |
|                                                  | GF733709.5012                                        |
|                                                  | GF733709.5013                                        |
|                                                  | GF733709.5015                                        |
|                                                  | GF733709.5016                                        |

|         |
|---------|
| GF-KEG  |
| ZGF     |
| ZIRK-GF |
| Gigant  |
| MoSys   |

Gewindetiefe  
Thread depth

2,5 x d<sub>1</sub>

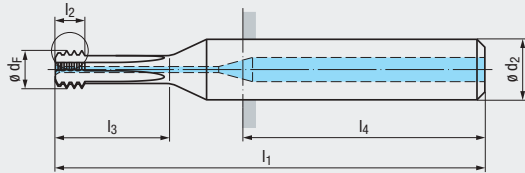
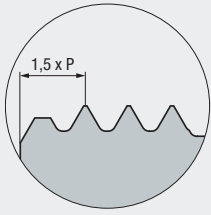
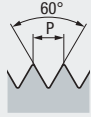
|       | $\emptyset d_1$<br>inch | P<br>Gg/1" (tpi) | $\emptyset d_F$<br>mm | $\emptyset d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) |
|-------|-------------------------|------------------|-----------------------|-----------------|-------|-------|-------|-------|---------------|
| Nr.10 |                         | 24               | 3,3                   | 6               | 55    | 4,2   | 14,2  | 36    | 3             |
| 1/4   |                         | 20               | 4,5                   | 6               | 60    | 5,1   | 18,4  | 36    | 3             |
| 5/16  |                         | 18               | 5,9                   | 6               | 62    | 5,6   | 22,7  | 36    | 4             |
| 3/8   |                         | 16               | 7,2                   | 8               | 68    | 6,4   | 27    | 36    | 4             |
| 7/16  |                         | 14               | 8,5                   | 10              | 78    | 7,3   | 31,4  | 40    | 4             |
| 1/2   |                         | 13               | 9,9                   | 10              | 82    | 7,8   | 35,7  | 40    | 4             |
| 5/8   |                         | 11               | 12,5                  | 14              | 98    | 9,2   | 44,3  | 45    | 4             |
| 3/4   |                         | 10               | 15,4                  | 16              | 110   | 10,2  | 52,7  | 48    | 5             |

| ZBGF-HCUT<br>2,5xd <sub>1</sub><br>HA<br>TIALN-T46 | ZBGF-HCUT<br>2,5xd <sub>1</sub><br>IKZ-HA<br>TIALN-T46 |
|----------------------------------------------------|--------------------------------------------------------|
| GF743709.5007                                      |                                                        |
| GF743709.5009                                      |                                                        |
|                                                    | GF743709.5010                                          |
|                                                    | GF743709.5011                                          |
|                                                    | GF743709.5012                                          |
|                                                    | GF743709.5013                                          |
|                                                    | GF743709.5015                                          |
|                                                    | GF743709.5016                                          |

Weitere Ausführungen auf Anfrage  
Further designs upon request

**UNF**

ASME B1.1

**VHM**  
Carbide**TIALN**  
T46**RH + LH****LH-rot.****Z4 - Z5****DIN 6535**Zum Anfasen geeignet  
Suitable for chamfering**ZBGF-HCUT**

new



new

Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth**N 2.7-2.8****H 1.1-1.5****2 x d<sub>1</sub>**

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) |
|--------------------------|------------------|------------------------|------------------|----------------|----------------|----------------|----------------|---------------|
| Nr.10                    | 32               | 3,5                    | 6                | 52             | 3,2            | 11,2           | 36             | 4             |
| 1/4                      | 28               | 4,8                    | 6                | 55             | 3,6            | 14,5           | 36             | 4             |
| 5/16                     | 24               | 6,2                    | 8                | 60             | 4,2            | 18             | 36             | 4             |
| 3/8                      | 24               | 7,7                    | 8                | 62             | 4,2            | 21,2           | 36             | 4             |
| 7/16                     | 20               | 8,9                    | 10               | 70             | 5,1            | 24,8           | 40             | 4             |
| 1/2                      | 20               | 10,5                   | 12               | 80             | 5,1            | 27,9           | 45             | 4             |
| 9/16                     | 18               | 11,8                   | 12               | 80             | 5,6            | 31,4           | 45             | 4             |
| 5/8                      | 18               | 13,3                   | 14               | 85             | 5,6            | 34,6           | 45             | 5             |
| 3/4                      | 16               | 15,9                   | 16               | 95             | 6,4            | 41,3           | 48             | 5             |

**ZBGF-HCUT**  
**2xd<sub>1</sub>**  
**HA**  
**TIALN-T46****GF733709.5041****ZBGF-HCUT**  
**2xd<sub>1</sub>**  
**IKZ-HA**  
**TIALN-T46****GF733709.5043****GF733709.5044****GF733709.5045****GF733709.5046****GF733709.5047****GF733709.5048****GF733709.5049****GF733709.5050**Gewindetiefe  
Thread depth**2,5 x d<sub>1</sub>**

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) |
|--------------------------|------------------|------------------------|------------------|----------------|----------------|----------------|----------------|---------------|
| Nr.10                    | 32               | 3,5                    | 6                | 55             | 3,2            | 13,7           | 36             | 4             |
| 1/4                      | 28               | 4,8                    | 6                | 58             | 3,6            | 17,7           | 36             | 4             |
| 5/16                     | 24               | 6,2                    | 8                | 64             | 4,2            | 22             | 36             | 4             |
| 3/8                      | 24               | 7,7                    | 8                | 66             | 4,2            | 25,9           | 36             | 4             |
| 7/16                     | 20               | 8,9                    | 10               | 76             | 5,1            | 30,3           | 40             | 4             |
| 1/2                      | 20               | 10,5                   | 12               | 85             | 5,1            | 34,3           | 45             | 4             |
| 9/16                     | 18               | 11,8                   | 12               | 90             | 5,6            | 38,5           | 45             | 4             |
| 5/8                      | 18               | 13,3                   | 14               | 93             | 5,6            | 42,5           | 45             | 5             |
| 3/4                      | 16               | 15,9                   | 16               | 105            | 6,4            | 50,8           | 48             | 5             |

**ZBGF-HCUT**  
**2,5xd<sub>1</sub>**  
**HA**  
**TIALN-T46****GF743709.5041****ZBGF-HCUT**  
**2,5xd<sub>1</sub>**  
**IKZ-HA**  
**TIALN-T46****GF743709.5043****GF743709.5044****GF743709.5045****GF743709.5046****GF743709.5047****GF743709.5048****GF743709.5049****GF743709.5050**Weitere Ausführungen auf Anfrage  
Further designs upon requestProduct  
Finderv<sub>c</sub> / f<sub>z</sub>

M

MF

UNC  
UN, UNS**UNF**  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

**ZBGF**

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

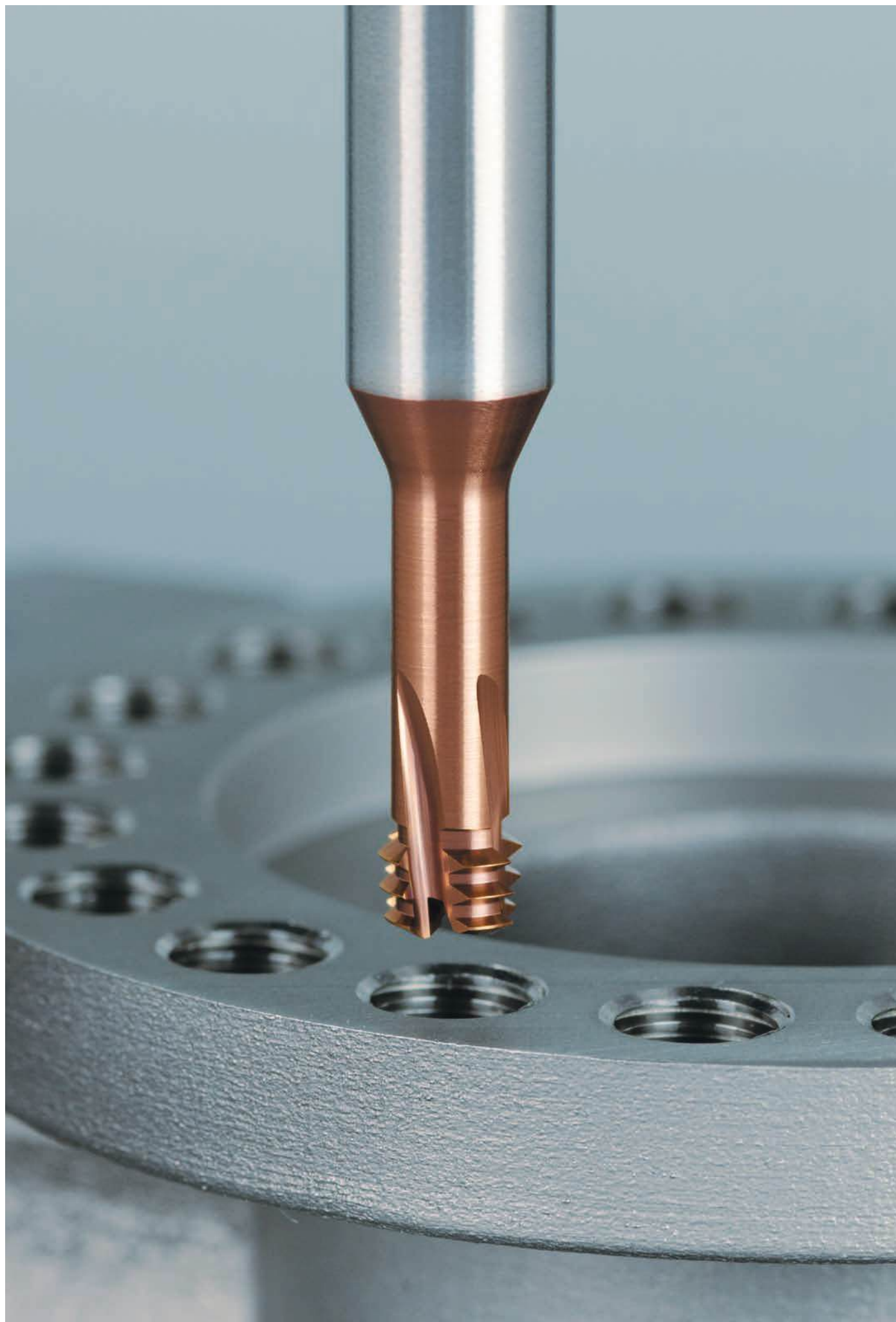
MoSys



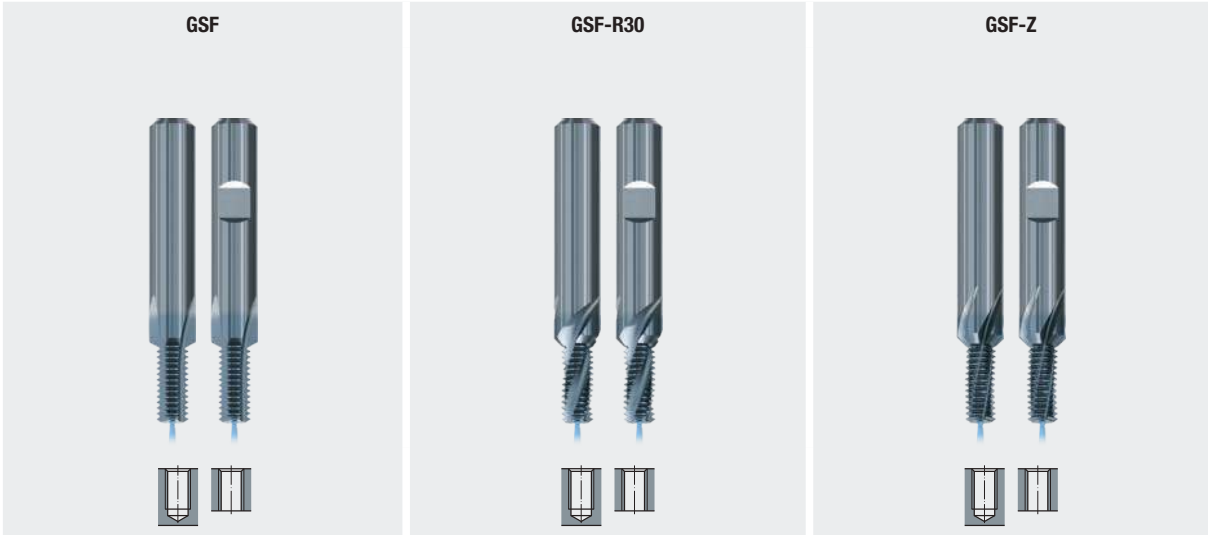


|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

|             |
|-------------|
| BGF         |
| <b>ZBGF</b> |
| GSF         |
| GF          |
| GF-VZ       |
| GF-KEG      |
| ZGF         |
| ZIRK-GF     |
| Gigant      |
| MoSys       |







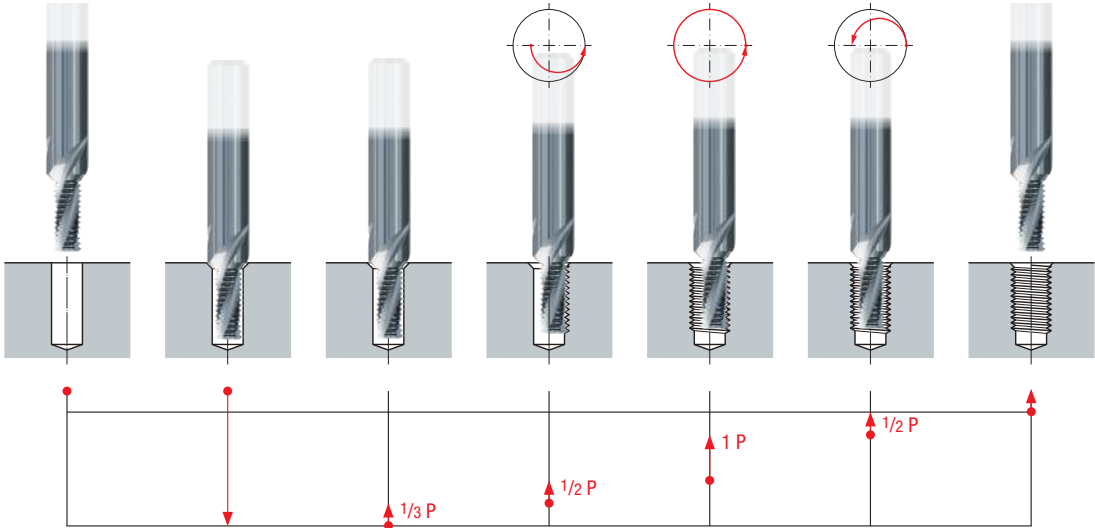
|           |           |           |
|-----------|-----------|-----------|
| 406 - 407 | 408 - 409 | 410 - 411 |
| 412 - 413 | 414 - 415 | 416 - 417 |
|           | 418 - 419 |           |
|           | 420 - 421 |           |
|           | 422 - 423 |           |
| 424 - 425 |           |           |

Mögliche Modifikationen siehe Seite 356 - 357  
Possible modifications, see pages 356 - 357

| Product Finder         |
|------------------------|
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

|         |
|---------|
| BGF     |
| ZBGF    |
| GSF     |
| GF      |
| GF-VZ   |
| GF-KEG  |
| ZGF     |
| ZIRK-GF |
| Gigant  |
| MoSys   |

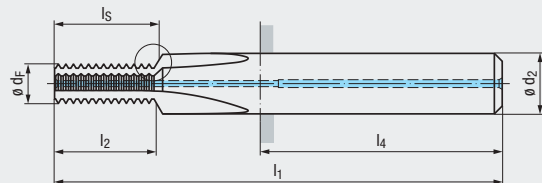
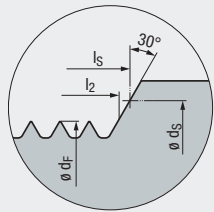
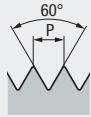
Gewindefräszyklus · Thread milling cycle





**M**

DIN 13

**VHM**  
Carbide**TICN****RH + LH****Z3 - Z4****DIN 6535****GSF**Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth**P**

1.1-5.1

**M**

1.1-4.1

**K**

1.1-4.2

**N**

1.1-5.3

**S**

1.1-2.6

**H**

1.1-1.2

**1,5 x d<sub>1</sub>**

|          | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) |
|----------|------------------------|---------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|
| <b>M</b> | 3                      | 0,5     | 2,4                    | 4                | 3,2              | 42             | 4,7            | 28             | 5              | 3             |
|          | 4                      | 0,7     | 3,15                   | 6                | 4,2              | 55             | 5,9            | 36             | 6,2            | 3             |
|          | 5                      | 0,8     | 4                      | 6                | 5,3              | 55             | 7,6            | 36             | 8              | 3             |
|          | 6                      | 1       | 4,8                    | 8                | 6,3              | 62             | 9,5            | 36             | 9,9            | 3             |
|          | 8                      | 1,25    | 6,5                    | 10               | 8,4              | 74             | 13,1           | 40             | 13,7           | 3             |
|          | 10                     | 1,5     | 8,2                    | 12               | 10,5             | 80             | 15,7           | 45             | 16,4           | 3             |
|          | 12                     | 1,75    | 9,9                    | 14               | 12,6             | 90             | 18,3           | 45             | 19,1           | 4             |
|          | 14                     | 2       | 11,6                   | 16               | 14,7             | 100            | 23             | 48             | 23,9           | 4             |
|          | 16                     | 2       | 13,6                   | 18               | 16,8             | 102            | 25             | 48             | 25,9           | 4             |

GSF  
1,5xd<sub>1</sub>  
HA  
TICNGSF  
1,5xd<sub>1</sub>  
IKZ-HA  
TICNGSF  
1,5xd<sub>1</sub>  
IKZ-HB  
TICN

GF303706.0030

GF323706.0040

GF323106.0040

GF323706.0050

GF323106.0050

GF323706.0060

GF323106.0060

GF323706.0080

GF323106.0080

GF323706.0100

GF323106.0100

GF323706.0112

GF323106.0112

GF323706.0114

GF323106.0114

GF323706.0116

GF323106.0116

Gewindetiefe  
Thread depth**2 x d<sub>1</sub>**

|          | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) |
|----------|------------------------|---------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|
| <b>M</b> | 3                      | 0,5     | 2,4                    | 4                | 3,2              | 42             | 6,2            | 28             | 6,5            | 3             |
|          | 4                      | 0,7     | 3,15                   | 6                | 4,2              | 55             | 8,7            | 36             | 9              | 3             |
|          | 5                      | 0,8     | 4                      | 6                | 5,3              | 55             | 10,8           | 36             | 11,2           | 3             |
|          | 6                      | 1       | 4,8                    | 8                | 6,3              | 62             | 12,5           | 36             | 12,9           | 3             |
|          | 8                      | 1,25    | 6,5                    | 10               | 8,4              | 74             | 16,8           | 40             | 17,4           | 3             |
|          | 10                     | 1,5     | 8,2                    | 12               | 10,5             | 80             | 20,2           | 45             | 20,9           | 3             |
|          | 12                     | 1,75    | 9,9                    | 14               | 12,6             | 90             | 25,3           | 45             | 26,1           | 4             |
|          | 14                     | 2       | 11,6                   | 16               | 14,7             | 100            | 29             | 48             | 29,9           | 4             |
|          | 16                     | 2       | 13,6                   | 18               | 16,8             | 102            | 33             | 48             | 33,9           | 4             |

GSF  
2xd<sub>1</sub>  
HA  
TICNGSF  
2xd<sub>1</sub>  
IKZ-HA  
TICNGSF  
2xd<sub>1</sub>  
IKZ-HB  
TICN

GF313706.0030

GF333706.0040

GF333106.0040

GF333706.0050

GF333106.0050

GF333706.0060

GF333106.0060

GF333706.0080

GF333106.0080

GF333706.0100

GF333106.0100

GF333706.0112

GF333106.0112

GF333706.0114

GF333106.0114

GF333706.0116

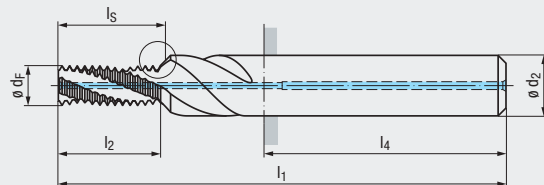
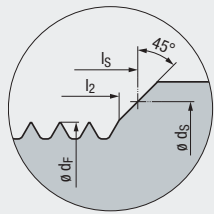
GF333106.0116

Weitere Ausführungen auf Anfrage  
Further designs upon request



**M**

DIN 13

VHM  
Carbide

TICN

R30

RH + LH

Z3 - Z4

DIN 6535



GSF-R30

Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

P 1.1-3.1 M 1.1-2.1 K 1.1-4.2  
N 1.1-2.7 N 3.1-5.3 S 1.1-1.2, 2.1

**1,5 x d<sub>1</sub>**

|          | Ø d <sub>1</sub><br>mm | P<br>mm | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | Ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF<br>1,5xd <sub>1</sub><br>R30-IKZ-HA<br>TICN | GSF<br>1,5xd <sub>1</sub><br>R30-IKZ-HB<br>TICN |
|----------|------------------------|---------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|-------------------------------------------------|-------------------------------------------------|
| <b>M</b> | 5                      | 0,8     | 4                      | 6                | 5,3              | 55             | 7,6            | 36             | 8,2            | 3             | GF322706.0050                                   | GF322106.0050                                   |
|          | 6                      | 1       | 4,8                    | 8                | 6,3              | 62             | 9,5            | 36             | 10,2           | 3             | GF322706.0060                                   | GF322106.0060                                   |
|          | 8                      | 1,25    | 6,5                    | 10               | 8,4              | 74             | 13,2           | 40             | 14             | 3             | GF322706.0080                                   | GF322106.0080                                   |
|          | 10                     | 1,5     | 8,2                    | 12               | 10,5             | 80             | 15,8           | 45             | 16,8           | 3             | GF322706.0100                                   | GF322106.0100                                   |
|          | 12                     | 1,75    | 9,9                    | 14               | 12,6             | 90             | 18,4           | 45             | 19,6           | 4             | GF322706.0112                                   | GF322106.0112                                   |
|          | 14                     | 2       | 11,6                   | 16               | 14,7             | 100            | 23,1           | 48             | 24,4           | 4             | GF322706.0114                                   | GF322106.0114                                   |
|          | 16                     | 2       | 13,6                   | 18               | 16,8             | 102            | 25,1           | 48             | 26,5           | 4             | GF322706.0116                                   | GF322106.0116                                   |

Gewindetiefe  
Thread depth**2 x d<sub>1</sub>**

|          | Ø d <sub>1</sub><br>mm | P<br>mm | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | Ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF<br>2xd <sub>1</sub><br>R30-IKZ-HA<br>TICN | GSF<br>2xd <sub>1</sub><br>R30-IKZ-HB<br>TICN |
|----------|------------------------|---------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|-----------------------------------------------|-----------------------------------------------|
| <b>M</b> | 5                      | 0,8     | 4                      | 6                | 5,3              | 55             | 10,8           | 36             | 11,4           | 3             | GF332706.0050                                 | GF332106.0050                                 |
|          | 6                      | 1       | 4,8                    | 8                | 6,3              | 62             | 12,5           | 36             | 13,2           | 3             | GF332706.0060                                 | GF332106.0060                                 |
|          | 8                      | 1,25    | 6,5                    | 10               | 8,4              | 74             | 16,9           | 40             | 17,8           | 3             | GF332706.0080                                 | GF332106.0080                                 |
|          | 10                     | 1,5     | 8,2                    | 12               | 10,5             | 80             | 20,3           | 45             | 21,3           | 3             | GF332706.0100                                 | GF332106.0100                                 |
|          | 12                     | 1,75    | 9,9                    | 14               | 12,6             | 90             | 25,4           | 45             | 26,6           | 4             | GF332706.0112                                 | GF332106.0112                                 |
|          | 14                     | 2       | 11,6                   | 16               | 14,7             | 100            | 29,1           | 48             | 30,4           | 4             | GF332706.0114                                 | GF332106.0114                                 |
|          | 16                     | 2       | 13,6                   | 18               | 16,8             | 102            | 33,1           | 48             | 34,5           | 4             | GF332706.0116                                 | GF332106.0116                                 |

Gewindetiefe  
Thread depth**2,5 x d<sub>1</sub>**

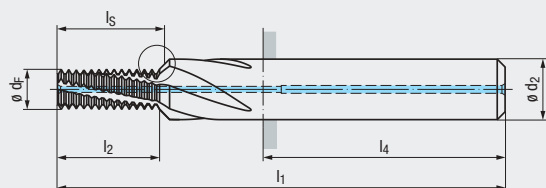
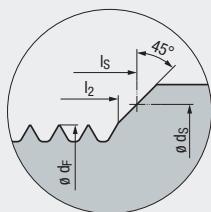
|          | Ø d <sub>1</sub><br>mm | P<br>mm | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | Ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF<br>2,5xd <sub>1</sub><br>R30-IKZ-HA<br>TICN | GSF<br>2,5xd <sub>1</sub><br>R30-IKZ-HB<br>TICN |
|----------|------------------------|---------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|-------------------------------------------------|-------------------------------------------------|
| <b>M</b> | 5                      | 0,8     | 4                      | 6                | 5,3              | 58             | 13,2           | 36             | 13,8           | 3             | GF342706.0050                                   | GF342106.0050                                   |
|          | 6                      | 1       | 4,8                    | 8                | 6,3              | 65             | 15,5           | 36             | 16,2           | 3             | GF342706.0060                                   | GF342106.0060                                   |
|          | 8                      | 1,25    | 6,5                    | 10               | 8,4              | 78             | 20,7           | 40             | 21,5           | 3             | GF342706.0080                                   | GF342106.0080                                   |
|          | 10                     | 1,5     | 8,2                    | 12               | 10,5             | 85             | 26,3           | 45             | 27,3           | 3             | GF342706.0100                                   | GF342106.0100                                   |
|          | 12                     | 1,75    | 9,9                    | 14               | 12,6             | 95             | 30,7           | 45             | 31,9           | 4             | GF342706.0112                                   | GF342106.0112                                   |
|          | 16                     | 2       | 13,6                   | 18               | 16,8             | 110            | 41,1           | 48             | 42,5           | 4             | GF342706.0116                                   | GF342106.0116                                   |

Weitere Ausführungen auf Anfrage  
Further designs upon request

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |



DIN 13



VHM  
Carbide

R15

RH + LH

Z4 - Z5



DIN 6535



GSF-Z



Mit höherer Nutenzahl  
With increased number of flutes



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.3

Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

|          | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF-Z<br>2xd <sub>1</sub><br>R15-IKZ-HA | GSF-Z<br>2xd <sub>1</sub><br>R15-IKZ-HB |
|----------|------------------------|---------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|-----------------------------------------|-----------------------------------------|
| <b>M</b> | 6                      | 1       | 4,8                    | 8                | 6,3              | 62             | 12,5           | 36             | 13,2           | 4             | GF335721.0060                           | GF335121.0060                           |
|          | 8                      | 1,25    | 6,5                    | 10               | 8,4              | 74             | 16,9           | 40             | 17,7           | 4             | GF335721.0080                           | GF335121.0080                           |
|          | 10                     | 1,5     | 8,2                    | 12               | 10,5             | 80             | 20,3           | 45             | 21,3           | 5             | GF335721.0100                           | GF335121.0100                           |
|          | 12                     | 1,75    | 9,9                    | 14               | 12,6             | 90             | 25,4           | 45             | 26,6           | 5             | GF335721.0112                           | GF335121.0112                           |

Weitere Ausführungen auf Anfrage  
Further designs upon request

A diagram of a rectangular window. It consists of a central rectangular pane flanked by two narrower vertical panes on each side. The entire window is enclosed within a rectangular frame.



**2 x d<sub>1</sub>**

|          | $\varnothing d_1$<br>mm | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_S$ | Z<br>(Flutes) | GSF-Z<br>2xd <sub>1</sub><br>R15-IKZ-HA<br>TiCN | GSF-Z<br>2xd <sub>1</sub><br>R15-IKZ-HB<br>TiCN |
|----------|-------------------------|---------|-------------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|-------------------------------------------------|-------------------------------------------------|
| <b>M</b> | 6                       | 1       | 4,8                     | 8                 | 6,3               | 62    | 12,5  | 36    | 13,2  | 4             | GF335726.0060                                   | GF335126.0060                                   |
|          | 8                       | 1,25    | 6,5                     | 10                | 8,4               | 74    | 16,9  | 40    | 17,7  | 4             | GF335726.0080                                   | GF335126.0080                                   |
|          | 10                      | 1,5     | 8,2                     | 12                | 10,5              | 80    | 20,3  | 45    | 21,3  | 5             | GF335726.0100                                   | GF335126.0100                                   |
|          | 12                      | 1,75    | 9,9                     | 14                | 12,6              | 90    | 25,4  | 45    | 26,6  | 5             | GF335726.0112                                   | GF335126.0112                                   |

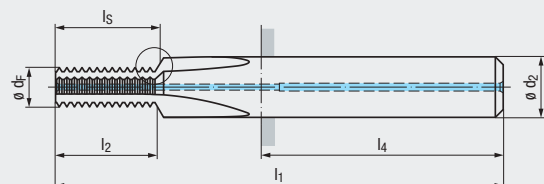
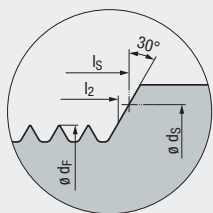


**EMUGE**  
**FRANKEN**

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |

# MF

DIN 13



VHM  
Carbide

RH + LH

Z3 - Z4



DIN 6535



GSF



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.3

Gewindetiefe  
Thread depth

1,5 x d<sub>1</sub>

|          | $\varnothing d_1$<br>mm |   | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_5$ | Z<br>(Flutes) | GSF<br>1,5x d <sub>1</sub><br>IKZ-HA | GSF<br>1,5x d <sub>1</sub><br>IKZ-HB |
|----------|-------------------------|---|---------|-------------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|--------------------------------------|--------------------------------------|
| <b>M</b> | 6                       | x | 0,75    | 5                       | 8                 | 6,3               | 62    | 9,4   | 36    | 9,7   | 3             | GF323701.0229                        | GF323101.0229                        |
|          | 8                       | x | 1       | 6,7                     | 10                | 8,4               | 74    | 12,5  | 40    | 13    | 3             | GF323701.0251                        | GF323101.0251                        |
|          | 10                      | x | 1       | 8,7                     | 12                | 10,5              | 80    | 15,5  | 45    | 16    | 3             | GF323701.0276                        | GF323101.0276                        |
|          | 10                      | x | 1,25    | 8,4                     | 12                | 10,5              | 80    | 15,6  | 45    | 16,2  | 3             | GF323701.0277                        | GF323101.0277                        |
|          | 12                      | x | 1       | 10,6                    | 14                | 12,6              | 90    | 18,5  | 45    | 19,1  | 4             | GF323701.0301                        | GF323101.0301                        |
|          | 12                      | x | 1,25    | 10,4                    | 14                | 12,6              | 90    | 18,1  | 45    | 18,7  | 4             | GF323701.0302                        | GF323101.0302                        |
|          | 12                      | x | 1,5     | 10,1                    | 14                | 12,6              | 90    | 18,7  | 45    | 19,4  | 4             | GF323701.0303                        | GF323101.0303                        |
|          | 14                      | x | 1,5     | 12,1                    | 16                | 14,7              | 100   | 21,7  | 48    | 22,5  | 4             | GF323701.0331                        | GF323101.0331                        |
|          | 16                      | x | 1,5     | 14                      | 18                | 16,8              | 102   | 24,7  | 48    | 25,5  | 4             | GF323701.0359                        | GF323101.0359                        |

Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

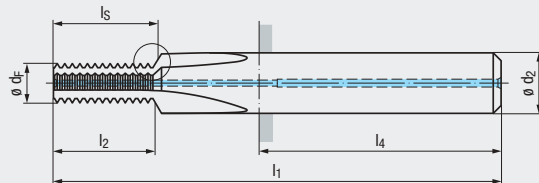
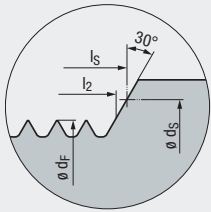
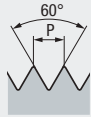
|          | $\varnothing d_1$<br>mm |   | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_5$ | Z<br>(Flutes) | GSF<br>2x d <sub>1</sub><br>IKZ-HA | GSF<br>2x d <sub>1</sub><br>IKZ-HB |
|----------|-------------------------|---|---------|-------------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|------------------------------------|------------------------------------|
| <b>M</b> | 6                       | x | 0,75    | 5                       | 8                 | 6,3               | 62    | 12,4  | 36    | 12,7  | 3             | GF333701.0229                      | GF333101.0229                      |
|          | 8                       | x | 1       | 6,7                     | 10                | 8,4               | 74    | 16,5  | 40    | 17    | 3             | GF333701.0251                      | GF333101.0251                      |
|          | 10                      | x | 1       | 8,7                     | 12                | 10,5              | 80    | 20,5  | 45    | 21    | 3             | GF333701.0276                      | GF333101.0276                      |
|          | 10                      | x | 1,25    | 8,4                     | 12                | 10,5              | 80    | 20,6  | 45    | 21,2  | 3             | GF333701.0277                      | GF333101.0277                      |
|          | 12                      | x | 1       | 10,6                    | 14                | 12,6              | 90    | 24,5  | 45    | 25,1  | 4             | GF333701.0301                      | GF333101.0301                      |
|          | 12                      | x | 1,25    | 10,4                    | 14                | 12,6              | 90    | 24,3  | 45    | 25    | 4             | GF333701.0302                      | GF333101.0302                      |
|          | 12                      | x | 1,5     | 10,1                    | 14                | 12,6              | 90    | 24,7  | 45    | 25,4  | 4             | GF333701.0303                      | GF333101.0303                      |
|          | 14                      | x | 1,5     | 12,1                    | 16                | 14,7              | 100   | 29,2  | 48    | 30    | 4             | GF333701.0331                      | GF333101.0331                      |
|          | 16                      | x | 1,5     | 14                      | 18                | 16,8              | 102   | 32,2  | 48    | 33    | 4             | GF333701.0359                      | GF333101.0359                      |

Weitere Ausführungen auf Anfrage  
Further designs upon request



**MF**

DIN 13

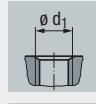
VHM  
Carbide

TICN

RH + LH

Z3 - Z4

DIN 6535



GSF

Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

|   |         |   |         |   |         |
|---|---------|---|---------|---|---------|
| P | 1.1-5.1 | M | 1.1-4.1 | K | 1.1-4.2 |
| N | 1.1-5.3 | S | 1.1-2.6 | H | 1.1-1.2 |

**1,5 x d<sub>1</sub>**

|          | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF<br>1,5xd <sub>1</sub><br>IKZ-HA<br>TICN | GSF<br>1,5xd <sub>1</sub><br>IKZ-HB<br>TICN |
|----------|------------------------|---------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|---------------------------------------------|---------------------------------------------|
| <b>M</b> | 6                      | x 0,75  | 5                      | 8                | 6,3              | 62             | 9,4            | 36             | 9,7            | 3             | GF323706.0229                               | GF323106.0229                               |
|          | 8                      | x 1     | 6,7                    | 10               | 8,4              | 74             | 12,5           | 40             | 13             | 3             | GF323706.0251                               | GF323106.0251                               |
|          | 10                     | x 1     | 8,7                    | 12               | 10,5             | 80             | 15,5           | 45             | 16             | 3             | GF323706.0276                               | GF323106.0276                               |
|          | 10                     | x 1,25  | 8,4                    | 12               | 10,5             | 80             | 15,6           | 45             | 16,2           | 3             | GF323706.0277                               | GF323106.0277                               |
|          | 12                     | x 1     | 10,6                   | 14               | 12,6             | 90             | 18,5           | 45             | 19,1           | 4             | GF323706.0301                               | GF323106.0301                               |
|          | 12                     | x 1,25  | 10,4                   | 14               | 12,6             | 90             | 18,1           | 45             | 18,7           | 4             | GF323706.0302                               | GF323106.0302                               |
|          | 12                     | x 1,5   | 10,1                   | 14               | 12,6             | 90             | 18,7           | 45             | 19,4           | 4             | GF323706.0303                               | GF323106.0303                               |
|          | 14                     | x 1,5   | 12,1                   | 16               | 14,7             | 100            | 21,7           | 48             | 22,5           | 4             | GF323706.0331                               | GF323106.0331                               |
|          | 16                     | x 1,5   | 14                     | 18               | 16,8             | 102            | 24,7           | 48             | 25,5           | 4             | GF323706.0359                               | GF323106.0359                               |

Gewindetiefe  
Thread depth**2 x d<sub>1</sub>**

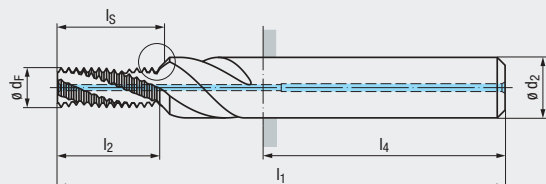
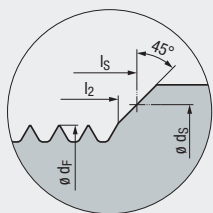
|          | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF<br>2xd <sub>1</sub><br>IKZ-HA<br>TICN | GSF<br>2xd <sub>1</sub><br>IKZ-HB<br>TICN |
|----------|------------------------|---------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|-------------------------------------------|-------------------------------------------|
| <b>M</b> | 6                      | x 0,75  | 5                      | 8                | 6,3              | 62             | 12,4           | 36             | 12,7           | 3             | GF333706.0229                             | GF333106.0229                             |
|          | 8                      | x 1     | 6,7                    | 10               | 8,4              | 74             | 16,5           | 40             | 17             | 3             | GF333706.0251                             | GF333106.0251                             |
|          | 10                     | x 1     | 8,7                    | 12               | 10,5             | 80             | 20,5           | 45             | 21             | 3             | GF333706.0276                             | GF333106.0276                             |
|          | 10                     | x 1,25  | 8,4                    | 12               | 10,5             | 80             | 20,6           | 45             | 21,2           | 3             | GF333706.0277                             | GF333106.0277                             |
|          | 12                     | x 1     | 10,6                   | 14               | 12,6             | 90             | 24,5           | 45             | 25,1           | 4             | GF333706.0301                             | GF333106.0301                             |
|          | 12                     | x 1,25  | 10,4                   | 14               | 12,6             | 90             | 24,3           | 45             | 25             | 4             | GF333706.0302                             | GF333106.0302                             |
|          | 12                     | x 1,5   | 10,1                   | 14               | 12,6             | 90             | 24,7           | 45             | 25,4           | 4             | GF333706.0303                             | GF333106.0303                             |
|          | 14                     | x 1,5   | 12,1                   | 16               | 14,7             | 100            | 29,2           | 48             | 30             | 4             | GF333706.0331                             | GF333106.0331                             |
|          | 16                     | x 1,5   | 14                     | 18               | 16,8             | 102            | 32,2           | 48             | 33             | 4             | GF333706.0359                             | GF333106.0359                             |

Weitere Ausführungen auf Anfrage  
Further designs upon request

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |



DIN 13



VHM  
Carbide

R30

RH + LH

Z3 - Z4



DIN 6535



GSF-R30



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-3.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.2

Gewindetiefe  
Thread depth

1,5 x d<sub>1</sub>

|          | $\phi d_1$<br>mm |   | P<br>mm | $\phi d_F$<br>mm | $\phi d_2$ | $\phi d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_S$ | Z<br>(Flutes) | GSF<br>1,5xd <sub>1</sub><br>R30-1KZ-HA | GSF<br>1,5xd <sub>1</sub><br>R30-1KZ-HB |
|----------|------------------|---|---------|------------------|------------|------------|-------|-------|-------|-------|---------------|-----------------------------------------|-----------------------------------------|
| <b>M</b> | 6                | x | 0,75    | 5                | 8          | 6,3        | 62    | 9,4   | 36    | 10    | 3             | GF322701.0229                           | GF322101.0229                           |
|          | 8                | x | 1       | 6,7              | 10         | 8,4        | 74    | 12,5  | 40    | 13,3  | 3             | GF322701.0251                           | GF322101.0251                           |
|          | 10               | x | 1       | 8,7              | 12         | 10,5       | 80    | 15,5  | 45    | 16,3  | 3             | GF322701.0276                           | GF322101.0276                           |
|          | 10               | x | 1,25    | 8,4              | 12         | 10,5       | 80    | 15,7  | 45    | 16,6  | 3             | GF322701.0277                           | GF322101.0277                           |
|          | 12               | x | 1       | 10,6             | 14         | 12,6       | 90    | 18,6  | 45    | 19,4  | 4             | GF322701.0301                           | GF322101.0301                           |
|          | 12               | x | 1,25    | 10,4             | 14         | 12,6       | 90    | 18,2  | 45    | 19,1  | 4             | GF322701.0302                           | GF322101.0302                           |
|          | 12               | x | 1,5     | 10,1             | 14         | 12,6       | 90    | 18,8  | 45    | 19,9  | 4             | GF322701.0303                           | GF322101.0303                           |
|          | 14               | x | 1,5     | 12,1             | 16         | 14,7       | 100   | 21,8  | 48    | 23    | 4             | GF322701.0331                           | GF322101.0331                           |
|          | 16               | x | 1,5     | 14               | 18         | 16,8       | 102   | 24,8  | 48    | 26,1  | 4             | GF322701.0359                           | GF322101.0359                           |

Gewindetiefe  
Thread depth

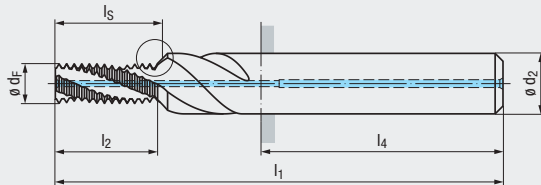
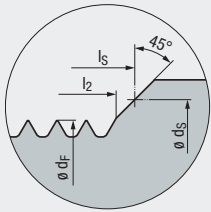
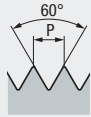
2 x d<sub>1</sub>

|          | $\phi d_1$<br>mm |   | P<br>mm | $\phi d_F$<br>mm | $\phi d_2$ | $\phi d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_S$ | Z<br>(Flutes) | GSF<br>2xd <sub>1</sub><br>R30-1KZ-HA | GSF<br>2xd <sub>1</sub><br>R30-1KZ-HB |
|----------|------------------|---|---------|------------------|------------|------------|-------|-------|-------|-------|---------------|---------------------------------------|---------------------------------------|
| <b>M</b> | 6                | x | 0,75    | 5                | 8          | 6,3        | 62    | 12,4  | 36    | 13    | 3             | GF332701.0229                         | GF332101.0229                         |
|          | 8                | x | 1       | 6,7              | 10         | 8,4        | 74    | 16,5  | 40    | 17,3  | 3             | GF332701.0251                         | GF332101.0251                         |
|          | 10               | x | 1       | 8,7              | 12         | 10,5       | 80    | 20,5  | 45    | 21,3  | 3             | GF332701.0276                         | GF332101.0276                         |
|          | 10               | x | 1,25    | 8,4              | 12         | 10,5       | 80    | 20,7  | 45    | 21,6  | 3             | GF332701.0277                         | GF332101.0277                         |
|          | 12               | x | 1       | 10,6             | 14         | 12,6       | 90    | 24,6  | 45    | 25,4  | 4             | GF332701.0301                         | GF332101.0301                         |
|          | 12               | x | 1,25    | 10,4             | 14         | 12,6       | 90    | 24,4  | 45    | 25,4  | 4             | GF332701.0302                         | GF332101.0302                         |
|          | 12               | x | 1,5     | 10,1             | 14         | 12,6       | 90    | 24,8  | 45    | 25,9  | 4             | GF332701.0303                         | GF332101.0303                         |
|          | 14               | x | 1,5     | 12,1             | 16         | 14,7       | 100   | 29,3  | 48    | 30,5  | 4             | GF332701.0331                         | GF332101.0331                         |
|          | 16               | x | 1,5     | 14               | 18         | 16,8       | 102   | 32,3  | 48    | 33,6  | 4             | GF332701.0359                         | GF332101.0359                         |

Weitere Ausführungen auf Anfrage  
Further designs upon request

**MF**

DIN 13

**VHM  
Carbide****TICN****R30****RH + LH****Z3 - Z4****DIN 6535****GSF-R30**Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

|                  |                  |                       |
|------------------|------------------|-----------------------|
| <b>P</b> 1.1-3.1 | <b>M</b> 1.1-2.1 | <b>K</b> 1.1-4.2      |
| <b>N</b> 1.1-2.7 | <b>N</b> 3.1-5.3 | <b>S</b> 1.1-1.2, 2.1 |

**1,5 x d<sub>1</sub>**

|          |   | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF<br>1,5xd <sub>1</sub><br>R30-IKZ-HA<br>TICN | GSF<br>1,5xd <sub>1</sub><br>R30-IKZ-HB<br>TICN |
|----------|---|------------------------|---------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|-------------------------------------------------|-------------------------------------------------|
| <b>M</b> | x | 6                      | 0,75    | 5                      | 8                | 6,3              | 62             | 9,4            | 36             | 10             | 3             | GF322706.0229                                   | GF322106.0229                                   |
|          | x | 8                      | 1       | 6,7                    | 10               | 8,4              | 74             | 12,5           | 40             | 13,3           | 3             | GF322706.0251                                   | GF322106.0251                                   |
|          | x | 10                     | 1       | 8,7                    | 12               | 10,5             | 80             | 15,5           | 45             | 16,3           | 3             | GF322706.0276                                   | GF322106.0276                                   |
|          | x | 10                     | 1,25    | 8,4                    | 12               | 10,5             | 80             | 15,7           | 45             | 16,6           | 3             | GF322706.0277                                   | GF322106.0277                                   |
|          | x | 12                     | 1       | 10,6                   | 14               | 12,6             | 90             | 18,6           | 45             | 19,4           | 4             | GF322706.0301                                   | GF322106.0301                                   |
|          | x | 12                     | 1,25    | 10,4                   | 14               | 12,6             | 90             | 18,2           | 45             | 19,1           | 4             | GF322706.0302                                   | GF322106.0302                                   |
|          | x | 12                     | 1,5     | 10,1                   | 14               | 12,6             | 90             | 18,8           | 45             | 19,9           | 4             | GF322706.0303                                   | GF322106.0303                                   |
|          | x | 14                     | 1,5     | 12,1                   | 16               | 14,7             | 100            | 21,8           | 48             | 23             | 4             | GF322706.0331                                   | GF322106.0331                                   |
|          | x | 16                     | 1,5     | 14                     | 18               | 16,8             | 102            | 24,8           | 48             | 26,1           | 4             | GF322706.0359                                   | GF322106.0359                                   |

Gewindetiefe  
Thread depth**2 x d<sub>1</sub>**

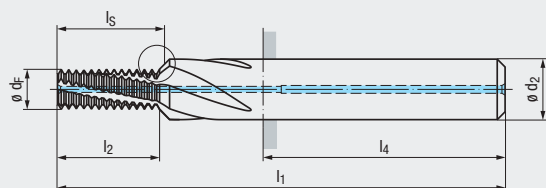
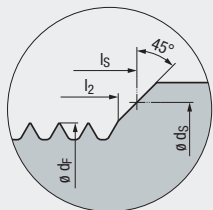
|          |   | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF<br>2xd <sub>1</sub><br>R30-IKZ-HA<br>TICN | GSF<br>2xd <sub>1</sub><br>R30-IKZ-HB<br>TICN |
|----------|---|------------------------|---------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|-----------------------------------------------|-----------------------------------------------|
| <b>M</b> | x | 6                      | 0,75    | 5                      | 8                | 6,3              | 62             | 12,4           | 36             | 13             | 3             | GF332706.0229                                 | GF332106.0229                                 |
|          | x | 8                      | 1       | 6,7                    | 10               | 8,4              | 74             | 16,5           | 40             | 17,3           | 3             | GF332706.0251                                 | GF332106.0251                                 |
|          | x | 10                     | 1       | 8,7                    | 12               | 10,5             | 80             | 20,5           | 45             | 21,3           | 3             | GF332706.0276                                 | GF332106.0276                                 |
|          | x | 10                     | 1,25    | 8,4                    | 12               | 10,5             | 80             | 20,7           | 45             | 21,6           | 3             | GF332706.0277                                 | GF332106.0277                                 |
|          | x | 12                     | 1       | 10,6                   | 14               | 12,6             | 90             | 24,6           | 45             | 25,4           | 4             | GF332706.0301                                 | GF332106.0301                                 |
|          | x | 12                     | 1,25    | 10,4                   | 14               | 12,6             | 90             | 24,4           | 45             | 25,4           | 4             | GF332706.0302                                 | GF332106.0302                                 |
|          | x | 12                     | 1,5     | 10,1                   | 14               | 12,6             | 90             | 24,8           | 45             | 25,9           | 4             | GF332706.0303                                 | GF332106.0303                                 |
|          | x | 14                     | 1,5     | 12,1                   | 16               | 14,7             | 100            | 29,3           | 48             | 30,5           | 4             | GF332706.0331                                 | GF332106.0331                                 |
|          | x | 16                     | 1,5     | 14                     | 18               | 16,8             | 102            | 32,3           | 48             | 33,6           | 4             | GF332706.0359                                 | GF332106.0359                                 |

Weitere Ausführungen auf Anfrage  
Further designs upon request

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |



DIN 13



VHM  
Carbide

R15

RH + LH

Z4 - Z5

DIN 6535



GSF-Z



Mit höherer Nutenzahl  
With increased number of flutes



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.3

Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

|     | ø d <sub>1</sub><br>mm |   | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF-Z<br>2xd <sub>1</sub><br>R15-IKZ-HA | GSF-Z<br>2xd <sub>1</sub><br>R15-IKZ-HB |
|-----|------------------------|---|---------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|-----------------------------------------|-----------------------------------------|
| M   | 8                      | x | 1       | 6,7                    | 10               | 8,4              | 74             | 16,5           | 40             | 17,3           | 4             | GF335721.0251                           | GF335121.0251                           |
|     | 10                     | x | 1       | 8,7                    | 12               | 10,5             | 80             | 20,5           | 45             | 21,3           | 5             | GF335721.0276                           | GF335121.0276                           |
| GSF | 12                     | x | 1,25    | 10,4                   | 14               | 12,6             | 90             | 24,4           | 45             | 25,4           | 5             | GF335721.0302                           | GF335121.0302                           |

Weitere Ausführungen auf Anfrage  
Further designs upon request



Kühlschmierstoffe siehe Seite 300 - 301

Coolant-lubricants, see page 300 - 301

A diagram showing a triangular cross-section of a material. The top angle is labeled  $60^\circ$ . A horizontal distance  $P$  is indicated between two vertical lines within the triangle.



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|                  |                  |                  |
|------------------|------------------|------------------|
| <b>P</b> 1.1-5.1 | <b>M</b> 1.1-4.1 | <b>K</b> 1.1-4.2 |
| <b>N</b> 1.1-5.3 | <b>S</b> 1.1-2.6 | <b>H</b> 1.1-1.2 |

**2 x d<sub>1</sub>**

|          | ø d <sub>1</sub><br>mm |   | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) |
|----------|------------------------|---|---------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|
| <b>M</b> | 8                      | x | 1       | 6,7                    | 10               | 8,4              | 74             | 16,5           | 40             | 17,3           | 4             |
|          | 10                     | x | 1       | 8,7                    | 12               | 10,5             | 80             | 20,5           | 45             | 21,3           | 5             |
|          | 12                     | x | 1.25    | 10.4                   | 14               | 12.6             | 90             | 24.4           | 45             | 25.4           | 5             |

| GSF-Z<br>2xd <sub>1</sub><br>R15-IKZ-HA<br>TICN | GSF-Z<br>2xd <sub>1</sub><br>R15-IKZ-HB<br>TICN |
|-------------------------------------------------|-------------------------------------------------|
| GF335726.0251                                   | GF335126.0251                                   |
| GF335726.0276                                   | GF335126.0276                                   |
| GF335726.0302                                   | GF335126.0302                                   |

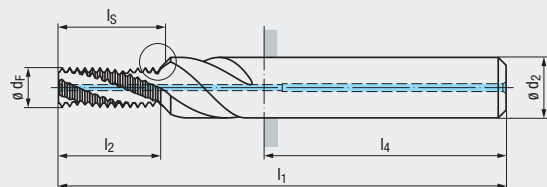
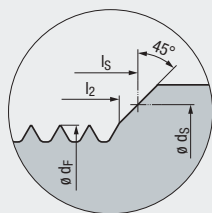
Weitere Ausführungen auf Anfrage  
Further designs upon request



|                |
|----------------|
| Product Finder |
| $v_c / f_z$    |
| M              |
| MF             |
| UNC            |
| UN, UNS        |
| UNF            |
| UNEF           |
| G, Rp          |
| NPT, NPTF      |
| Rc, W          |
| BSW, BSF       |
| Pg             |
| MJ             |
| UNJC, UNJF     |

# UNC

ASME B1.1



VHM  
Carbide

R30

RH + LH

Z3 - Z5



DIN 6535



GSF-R30



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-3.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.2

Gewindetiefe  
Thread depth

1,5 x d<sub>1</sub>

| $\varnothing d_1$<br>inch | P<br>Gg/1" (tpi) | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_5$ | Z<br>(Flutes) |
|---------------------------|------------------|-------------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|
| 1/4                       | 20               | 4,7                     | 8                 | 6,7               | 62    | 10,8  | 36    | 11,7  | 3             |
| 5/16                      | 18               | 6,15                    | 10                | 8,3               | 74    | 13,4  | 40    | 14,4  | 3             |
| 3/8                       | 16               | 7,65                    | 12                | 10                | 80    | 15,1  | 45    | 16,2  | 3             |
| 7/16                      | 14               | 9                       | 12                | 11,7              | 80    | 17,3  | 45    | 18,5  | 3             |
| 1/2                       | 13               | 10,35                   | 14                | 13,3              | 90    | 20,6  | 45    | 21,9  | 4             |
| 9/16                      | 12               | 11,8                    | 16                | 15                | 100   | 22,3  | 48    | 23,7  | 4             |
| 5/8                       | 11               | 13,1                    | 18                | 16,7              | 102   | 24,3  | 48    | 25,9  | 4             |
| 3/4                       | 10               | 16                      | 20                | 20                | 110   | 29,3  | 50    | 31,1  | 5             |

GSF  
1,5xd<sub>1</sub>  
R30-1KZ-HA

GSF  
1,5xd<sub>1</sub>  
R30-1KZ-HB

|               |               |
|---------------|---------------|
| GF322701.5009 | GF322101.5009 |
| GF322701.5010 | GF322101.5010 |
| GF322701.5011 | GF322101.5011 |
| GF322701.5012 | GF322101.5012 |
| GF322701.5013 | GF322101.5013 |
| GF322701.5014 | GF322101.5014 |
| GF322701.5015 | GF322101.5015 |
| GF322701.5016 | GF322101.5016 |

Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

| $\varnothing d_1$<br>inch | P<br>Gg/1" (tpi) | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_5$ | Z<br>(Flutes) |
|---------------------------|------------------|-------------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|
| 1/4                       | 20               | 4,7                     | 8                 | 6,7               | 62    | 13,4  | 36    | 14,3  | 3             |
| 5/16                      | 18               | 6,15                    | 10                | 8,3               | 74    | 16,3  | 40    | 17,2  | 3             |
| 3/8                       | 16               | 7,65                    | 12                | 10                | 80    | 19,9  | 45    | 20,9  | 3             |
| 7/16                      | 14               | 9                       | 12                | 11,7              | 80    | 22,7  | 45    | 23,9  | 3             |
| 1/2                       | 13               | 10,35                   | 14                | 13,3              | 90    | 26,4  | 45    | 27,8  | 4             |
| 9/16                      | 12               | 11,8                    | 16                | 15                | 100   | 30,8  | 48    | 32,2  | 4             |
| 5/8                       | 11               | 13,1                    | 18                | 16,7              | 102   | 33,5  | 48    | 35,2  | 4             |
| 3/4                       | 10               | 16                      | 20                | 20                | 110   | 39,4  | 50    | 41,2  | 5             |

GSF  
2xd<sub>1</sub>  
R30-1KZ-HA

GSF  
2xd<sub>1</sub>  
R30-1KZ-HB

|               |               |
|---------------|---------------|
| GF332701.5009 | GF332101.5009 |
| GF332701.5010 | GF332101.5010 |
| GF332701.5011 | GF332101.5011 |
| GF332701.5012 | GF332101.5012 |
| GF332701.5013 | GF332101.5013 |
| GF332701.5014 | GF332101.5014 |
| GF332701.5015 | GF332101.5015 |
| GF332701.5016 | GF332101.5016 |

Gewindetiefe  
Thread depth

2,5 x d<sub>1</sub>

| $\varnothing d_1$<br>inch | P<br>Gg/1" (tpi) | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_5$ | Z<br>(Flutes) |
|---------------------------|------------------|-------------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|
| 3/8                       | 16               | 7,65                    | 12                | 10                | 85    | 24,7  | 45    | 25,7  | 3             |
| 7/16                      | 14               | 9                       | 12                | 11,7              | 85    | 28,2  | 45    | 29,4  | 3             |
| 1/2                       | 13               | 10,35                   | 14                | 13,3              | 96    | 32,3  | 45    | 33,6  | 4             |
| 9/16                      | 12               | 11,8                    | 16                | 15                | 107   | 37,1  | 48    | 38,5  | 4             |
| 5/8                       | 11               | 13,1                    | 18                | 16,7              | 110   | 40,5  | 48    | 42,1  | 4             |

GSF  
2,5xd<sub>1</sub>  
R30-1KZ-HA

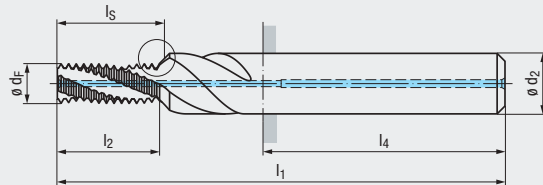
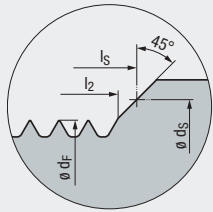
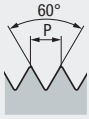
GSF  
2,5xd<sub>1</sub>  
R30-1KZ-HB

|               |               |
|---------------|---------------|
| GF342701.5011 | GF342101.5011 |
| GF342701.5012 | GF342101.5012 |
| GF342701.5013 | GF342101.5013 |
| GF342701.5014 | GF342101.5014 |
| GF342701.5015 | GF342101.5015 |

Weitere Ausführungen auf Anfrage  
Further designs upon request

**UNC**

ASME B1.1

**VHM**  
Carbide**TICN****R30****RH + LH****Z3 - Z5****DIN 6535****GSF-R30**Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

**P** 1.1-3.1 **M** 1.1-2.1 **K** 1.1-4.2  
**N** 1.1-2.7 **N** 3.1-5.3 **S** 1.1-1.2, 2.1

**1,5 x d<sub>1</sub>**

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | Ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF<br>1,5xd <sub>1</sub><br>R30-IKZ-HA<br>TICN | GSF<br>1,5xd <sub>1</sub><br>R30-IKZ-HB<br>TICN |
|--------------------------|------------------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|-------------------------------------------------|-------------------------------------------------|
| 1/4                      | 20               | 4,7                    | 8                | 6,7              | 62             | 10,8           | 36             | 11,7           | 3             | GF322706.5009                                   | GF322106.5009                                   |
| 5/16                     | 18               | 6,15                   | 10               | 8,3              | 74             | 13,4           | 40             | 14,4           | 3             | GF322706.5010                                   | GF322106.5010                                   |
| 3/8                      | 16               | 7,65                   | 12               | 10               | 80             | 15,1           | 45             | 16,2           | 3             | GF322706.5011                                   | GF322106.5011                                   |
| 7/16                     | 14               | 9                      | 12               | 11,7             | 80             | 17,3           | 45             | 18,5           | 3             | GF322706.5012                                   | GF322106.5012                                   |
| 1/2                      | 13               | 10,35                  | 14               | 13,3             | 90             | 20,6           | 45             | 21,9           | 4             | GF322706.5013                                   | GF322106.5013                                   |
| 9/16                     | 12               | 11,8                   | 16               | 15               | 100            | 22,3           | 48             | 23,7           | 4             | GF322706.5014                                   | GF322106.5014                                   |
| 5/8                      | 11               | 13,1                   | 18               | 16,7             | 102            | 24,3           | 48             | 25,9           | 4             | GF322706.5015                                   | GF322106.5015                                   |
| 3/4                      | 10               | 16                     | 20               | 20               | 110            | 29,3           | 50             | 31,1           | 5             | GF322706.5016                                   | GF322106.5016                                   |

Gewindetiefe  
Thread depth**2 x d<sub>1</sub>**

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | Ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF<br>2xd <sub>1</sub><br>R30-IKZ-HA<br>TICN | GSF<br>2xd <sub>1</sub><br>R30-IKZ-HB<br>TICN |
|--------------------------|------------------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|-----------------------------------------------|-----------------------------------------------|
| 1/4                      | 20               | 4,7                    | 8                | 6,7              | 62             | 13,4           | 36             | 14,3           | 3             | GF332706.5009                                 | GF332106.5009                                 |
| 5/16                     | 18               | 6,15                   | 10               | 8,3              | 74             | 16,3           | 40             | 17,2           | 3             | GF332706.5010                                 | GF332106.5010                                 |
| 3/8                      | 16               | 7,65                   | 12               | 10               | 80             | 19,9           | 45             | 20,9           | 3             | GF332706.5011                                 | GF332106.5011                                 |
| 7/16                     | 14               | 9                      | 12               | 11,7             | 80             | 22,7           | 45             | 23,9           | 3             | GF332706.5012                                 | GF332106.5012                                 |
| 1/2                      | 13               | 10,35                  | 14               | 13,3             | 90             | 26,4           | 45             | 27,8           | 4             | GF332706.5013                                 | GF332106.5013                                 |
| 9/16                     | 12               | 11,8                   | 16               | 15               | 100            | 30,8           | 48             | 32,2           | 4             | GF332706.5014                                 | GF332106.5014                                 |
| 5/8                      | 11               | 13,1                   | 18               | 16,7             | 102            | 33,5           | 48             | 35,2           | 4             | GF332706.5015                                 | GF332106.5015                                 |
| 3/4                      | 10               | 16                     | 20               | 20               | 110            | 39,4           | 50             | 41,2           | 5             | GF332706.5016                                 | GF332106.5016                                 |

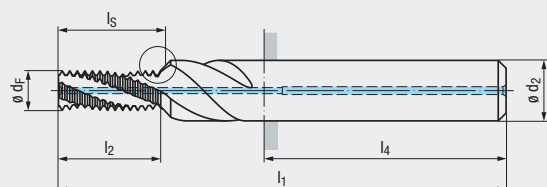
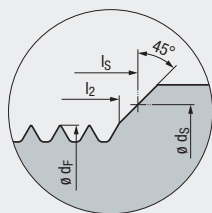
Gewindetiefe  
Thread depth**2,5 x d<sub>1</sub>**

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | Ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF<br>2,5xd <sub>1</sub><br>R30-IKZ-HA<br>TICN | GSF<br>2,5xd <sub>1</sub><br>R30-IKZ-HB<br>TICN |
|--------------------------|------------------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|-------------------------------------------------|-------------------------------------------------|
| 3/8                      | 16               | 7,65                   | 12               | 10               | 85             | 24,7           | 45             | 25,7           | 3             | GF342706.5011                                   | GF342106.5011                                   |
| 7/16                     | 14               | 9                      | 12               | 11,7             | 85             | 28,2           | 45             | 29,4           | 3             | GF342706.5012                                   | GF342106.5012                                   |
| 1/2                      | 13               | 10,35                  | 14               | 13,3             | 96             | 32,3           | 45             | 33,6           | 4             | GF342706.5013                                   | GF342106.5013                                   |
| 9/16                     | 12               | 11,8                   | 16               | 15               | 107            | 37,1           | 48             | 38,5           | 4             | GF342706.5014                                   | GF342106.5014                                   |
| 5/8                      | 11               | 13,1                   | 18               | 16,7             | 110            | 40,5           | 48             | 42,1           | 4             | GF342706.5015                                   | GF342106.5015                                   |

Weitere Ausführungen auf Anfrage  
Further designs upon request

# UNF

ASME B1.1



VHM  
Carbide

R30

RH + LH

Z3 - Z5



DIN 6535



GSF-R30



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-3.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.2

Gewindetiefe  
Thread depth

1,5 x d<sub>1</sub>

| $\emptyset d_1$<br>inch | P<br>Gg/1" (tpi) | $\emptyset d_f$<br>mm | $\emptyset d_2$ | $\emptyset d_s$ | $l_1$ | $l_2$ | $l_4$ | $l_s$ | Z<br>(Flutes) |
|-------------------------|------------------|-----------------------|-----------------|-----------------|-------|-------|-------|-------|---------------|
| Nr.10                   | 32               | 3,8                   | 6               | 5,1             | 55    | 7,6   | 36    | 8,1   | 3             |
| 1/4                     | 28               | 5,15                  | 8               | 6,7             | 62    | 10,5  | 36    | 11,1  | 3             |
| 5/16                    | 24               | 6,6                   | 10              | 8,3             | 74    | 12,2  | 40    | 13    | 3             |
| 3/8                     | 24               | 8,2                   | 12              | 10              | 80    | 14,3  | 45    | 15,1  | 3             |
| 7/16                    | 20               | 9,55                  | 12              | 11,7            | 80    | 17,2  | 45    | 18,1  | 3             |
| 1/2                     | 20               | 11,1                  | 14              | 13,3            | 90    | 19,7  | 45    | 20,7  | 4             |
| 9/16                    | 18               | 12,5                  | 16              | 15              | 100   | 21,9  | 48    | 23    | 4             |
| 5/8                     | 18               | 14,1                  | 18              | 16,7            | 102   | 24,8  | 48    | 25,9  | 4             |

GSF  
1,5xd<sub>1</sub>  
R30-1KZ-HA

GSF  
1,5xd<sub>1</sub>  
R30-1KZ-HB

|               |               |
|---------------|---------------|
| GF322701.5041 | GF322101.5041 |
| GF322701.5043 | GF322101.5043 |
| GF322701.5044 | GF322101.5044 |
| GF322701.5045 | GF322101.5045 |
| GF322701.5046 | GF322101.5046 |
| GF322701.5047 | GF322101.5047 |
| GF322701.5048 | GF322101.5048 |
| GF322701.5049 | GF322101.5049 |

Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

| $\emptyset d_1$<br>inch | P<br>Gg/1" (tpi) | $\emptyset d_f$<br>mm | $\emptyset d_2$ | $\emptyset d_s$ | $l_1$ | $l_2$ | $l_4$ | $l_s$ | Z<br>(Flutes) |
|-------------------------|------------------|-----------------------|-----------------|-----------------|-------|-------|-------|-------|---------------|
| Nr.10                   | 32               | 3,8                   | 6               | 5,1             | 55    | 10    | 36    | 10,5  | 3             |
| 1/4                     | 28               | 5,15                  | 8               | 6,7             | 62    | 13,2  | 36    | 13,9  | 3             |
| 5/16                    | 24               | 6,6                   | 10              | 8,3             | 74    | 16,4  | 40    | 17,2  | 3             |
| 3/8                     | 24               | 8,2                   | 12              | 10              | 80    | 19,6  | 45    | 20,4  | 3             |
| 7/16                    | 20               | 9,55                  | 12              | 11,7            | 80    | 22,3  | 45    | 23,2  | 3             |
| 1/2                     | 20               | 11,1                  | 14              | 13,3            | 90    | 26,1  | 45    | 27    | 4             |
| 9/16                    | 18               | 12,5                  | 16              | 15              | 100   | 29    | 48    | 30,1  | 4             |
| 5/8                     | 18               | 14,1                  | 18              | 16,7            | 102   | 33,2  | 48    | 34,4  | 4             |
| 3/4                     | 16               | 17                    | 20              | 20              | 110   | 39    | 50    | 40,3  | 5             |

GSF  
2xd<sub>1</sub>  
R30-1KZ-HA

GSF  
2xd<sub>1</sub>  
R30-1KZ-HB

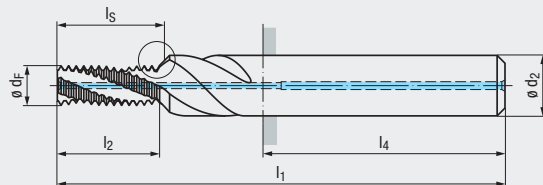
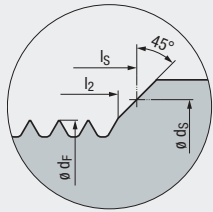
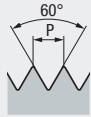
|               |               |
|---------------|---------------|
| GF332701.5041 | GF332101.5041 |
| GF332701.5043 | GF332101.5043 |
| GF332701.5044 | GF332101.5044 |
| GF332701.5045 | GF332101.5045 |
| GF332701.5046 | GF332101.5046 |
| GF332701.5047 | GF332101.5047 |
| GF332701.5048 | GF332101.5048 |
| GF332701.5049 | GF332101.5049 |
| GF332701.5050 | GF332101.5050 |

Weitere Ausführungen auf Anfrage  
Further designs upon request



**UNF**

ASME B1.1

**VHM**  
Carbide**TICN****R30****RH + LH****Z3 - Z5****DIN 6535****GSF-R30**Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

**P** 1.1-3.1 **M** 1.1-2.1 **K** 1.1-4.2  
**N** 1.1-2.7 **N** 3.1-5.3 **S** 1.1-1.2, 2.1

**1,5 x d<sub>1</sub>**

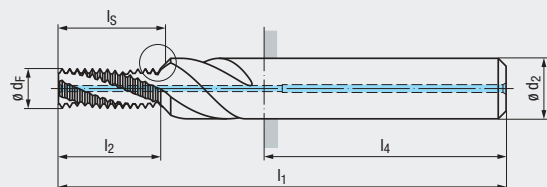
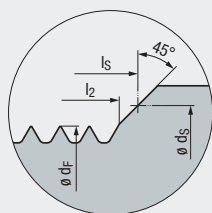
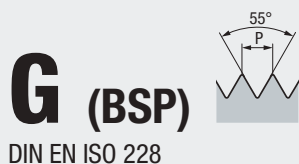
| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | Ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF<br>1,5xd <sub>1</sub><br>R30-IKZ-HA<br>TICN | GSF<br>1,5xd <sub>1</sub><br>R30-IKZ-HB<br>TICN |
|--------------------------|------------------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|-------------------------------------------------|-------------------------------------------------|
| Nr.10                    | 32               | 3,8                    | 6                | 5,1              | 55             | 7,6            | 36             | 8,1            | 3             | GF322706.5041                                   | GF322106.5041                                   |
| 1/4                      | 28               | 5,15                   | 8                | 6,7              | 62             | 10,5           | 36             | 11,1           | 3             | GF322706.5043                                   | GF322106.5043                                   |
| 5/16                     | 24               | 6,6                    | 10               | 8,3              | 74             | 12,2           | 40             | 13             | 3             | GF322706.5044                                   | GF322106.5044                                   |
| 3/8                      | 24               | 8,2                    | 12               | 10               | 80             | 14,3           | 45             | 15,1           | 3             | GF322706.5045                                   | GF322106.5045                                   |
| 7/16                     | 20               | 9,55                   | 12               | 11,7             | 80             | 17,2           | 45             | 18,1           | 3             | GF322706.5046                                   | GF322106.5046                                   |
| 1/2                      | 20               | 11,1                   | 14               | 13,3             | 90             | 19,7           | 45             | 20,7           | 4             | GF322706.5047                                   | GF322106.5047                                   |
| 9/16                     | 18               | 12,5                   | 16               | 15               | 100            | 21,9           | 48             | 23             | 4             | GF322706.5048                                   | GF322106.5048                                   |
| 5/8                      | 18               | 14,1                   | 18               | 16,7             | 102            | 24,8           | 48             | 25,9           | 4             | GF322706.5049                                   | GF322106.5049                                   |

Gewindetiefe  
Thread depth**2 x d<sub>1</sub>**

| Ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | Ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF<br>2xd <sub>1</sub><br>R30-IKZ-HA<br>TICN | GSF<br>2xd <sub>1</sub><br>R30-IKZ-HB<br>TICN |
|--------------------------|------------------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|-----------------------------------------------|-----------------------------------------------|
| Nr.10                    | 32               | 3,8                    | 6                | 5,1              | 55             | 10             | 36             | 10,5           | 3             | GF332706.5041                                 | GF332106.5041                                 |
| 1/4                      | 28               | 5,15                   | 8                | 6,7              | 62             | 13,2           | 36             | 13,9           | 3             | GF332706.5043                                 | GF332106.5043                                 |
| 5/16                     | 24               | 6,6                    | 10               | 8,3              | 74             | 16,4           | 40             | 17,2           | 3             | GF332706.5044                                 | GF332106.5044                                 |
| 3/8                      | 24               | 8,2                    | 12               | 10               | 80             | 19,6           | 45             | 20,4           | 3             | GF332706.5045                                 | GF332106.5045                                 |
| 7/16                     | 20               | 9,55                   | 12               | 11,7             | 80             | 22,3           | 45             | 23,2           | 3             | GF332706.5046                                 | GF332106.5046                                 |
| 1/2                      | 20               | 11,1                   | 14               | 13,3             | 90             | 26,1           | 45             | 27             | 4             | GF332706.5047                                 | GF332106.5047                                 |
| 9/16                     | 18               | 12,5                   | 16               | 15               | 100            | 29             | 48             | 30,1           | 4             | GF332706.5048                                 | GF332106.5048                                 |
| 5/8                      | 18               | 14,1                   | 18               | 16,7             | 102            | 33,2           | 48             | 34,4           | 4             | GF332706.5049                                 | GF332106.5049                                 |
| 3/4                      | 16               | 17                     | 20               | 20               | 110            | 39             | 50             | 40,3           | 5             | GF332706.5050                                 | GF332106.5050                                 |

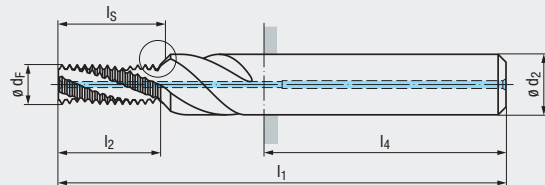
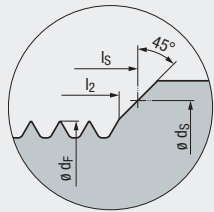
Weitere Ausführungen auf Anfrage  
Further designs upon request

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |



**G (BSP)**

DIN EN ISO 228

**VHM**  
Carbide**TICN****R30****RH + LH****Z3 - Z4****DIN 6535****GSF-R30**Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

|                  |                  |                       |
|------------------|------------------|-----------------------|
| <b>P</b> 1.1-3.1 | <b>M</b> 1.1-2.1 | <b>K</b> 1.1-4.2      |
| <b>N</b> 1.1-2.7 | <b>N</b> 3.1-5.3 | <b>S</b> 1.1-1.2, 2.1 |

**1,5 x d<sub>1</sub>**

|          | Nenngroße<br>Nom. size |    | P<br>Gg/1" (tpi) | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF<br>1,5xd <sub>1</sub><br>R30-1KZ-HA<br>TICN | GSF<br>1,5xd <sub>1</sub><br>R30-1KZ-HB<br>TICN |
|----------|------------------------|----|------------------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|-------------------------------------------------|-------------------------------------------------|
|          | ø d <sub>1</sub>       |    |                  |                        |                  |                  |                |                |                |                |               | GF322706.4035<br>GF322706.4036<br>GF322706.4037 | GF322106.4035<br>GF322106.4036<br>GF322106.4037 |
| <b>G</b> | 1/8                    | 28 | 8,2              | 12                     | 10,2             | 80               | 15             | 45             | 15,9           | 3              |               |                                                 |                                                 |
|          | 1/4                    | 19 | 11               | 16                     | 13,8             | 100              | 20,7           | 48             | 22             | 4              |               |                                                 |                                                 |
|          | 3/8                    | 19 | 14,5             | 18                     | 17,5             | 102              | 26,1           | 48             | 27,4           | 4              |               |                                                 |                                                 |

Gewindetiefe  
Thread depth**2 x d<sub>1</sub>**

|          | Nenngroße<br>Nom. size |    | P<br>Gg/1" (tpi) | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>S</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | l <sub>S</sub> | Z<br>(Flutes) | GSF<br>2xd <sub>1</sub><br>R30-1KZ-HA<br>TICN   | GSF<br>2xd <sub>1</sub><br>R30-1KZ-HB<br>TICN   |
|----------|------------------------|----|------------------|------------------------|------------------|------------------|----------------|----------------|----------------|----------------|---------------|-------------------------------------------------|-------------------------------------------------|
|          | ø d <sub>1</sub>       |    |                  |                        |                  |                  |                |                |                |                |               | GF332706.4035<br>GF332706.4036<br>GF332706.4037 | GF332106.4035<br>GF332106.4036<br>GF332106.4037 |
| <b>G</b> | 1/8                    | 28 | 8,2              | 12                     | 10,2             | 80               | 20,4           | 45             | 21,3           | 3              |               |                                                 |                                                 |
|          | 1/4                    | 19 | 11               | 16                     | 13,8             | 100              | 27,4           | 48             | 28,7           | 4              |               |                                                 |                                                 |
|          | 3/8                    | 19 | 14,5             | 18                     | 17,5             | 102              | 34,1           | 48             | 35,4           | 4              |               |                                                 |                                                 |

Weitere Ausführungen auf Anfrage  
Further designs upon requestProduct  
Finderv<sub>c</sub> / f<sub>z</sub>

M

MF

UNC

UN, UNS

UNF

UNEF

G, Rp

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör

Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

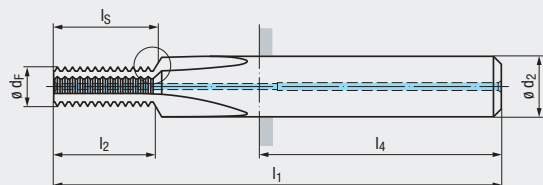
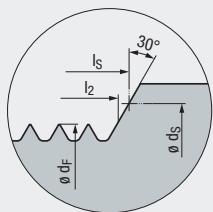
MoSys



|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |

# LK-M

EMUGE-Norm · EMUGE Standard



VHM  
Carbide

RH + LH

Z3 - Z4



DIN 6535



GSF



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.3

Gewindetiefe  
Thread depth

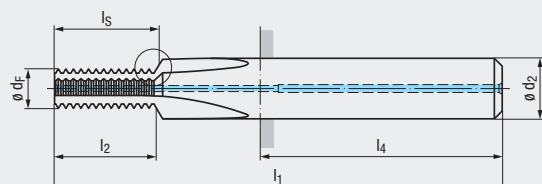
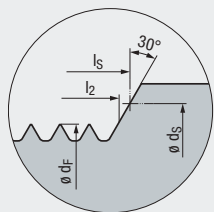
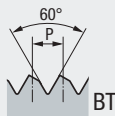
2 x d<sub>1</sub>

|      | $\varnothing d_1$<br>mm | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_3$ | $l_1$ | $l_2$ | $l_4$ | $l_5$ | Z<br>(Flutes) | GSF<br>2xd <sub>1</sub><br>IKZ-HA | GSF<br>2xd <sub>1</sub><br>IKZ-HB |
|------|-------------------------|---------|-------------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|-----------------------------------|-----------------------------------|
| LK-M | 5                       | 0,8     | 4                       | 6                 | 5,3               | 55    | 10,7  | 36    | 11,1  | 3             | GF333701.1050                     | GF333101.1050                     |
|      | 6                       | 1       | 4,8                     | 8                 | 6,3               | 62    | 12,4  | 36    | 12,8  | 3             | GF333701.1052                     | GF333101.1052                     |
| BGF  | 8                       | 1,25    | 6,5                     | 10                | 8,4               | 74    | 16,7  | 40    | 17,3  | 3             | GF333701.1054                     | GF333101.1054                     |
|      | 10                      | 1,5     | 8,2                     | 12                | 10,5              | 80    | 20,1  | 45    | 20,8  | 3             | GF333701.1056                     | GF333101.1056                     |
| ZBGF | 12                      | 1,75    | 9,9                     | 14                | 12,6              | 90    | 25,2  | 45    | 26    | 4             | GF333701.1058                     | GF333101.1058                     |

Weitere Ausführungen auf Anfrage  
Further designs upon request

**LK-M**

EMUGE-Norm · EMUGE Standard

**VHM**  
Carbide**TICN****RH + LH****Z3 - Z4****DIN 6535****GSF**Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

|             | $\varnothing d_1$<br>mm | P<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_S$ | $l_1$ | $l_2$ | $l_4$ | $l_S$ | Z<br>(Flutes) |
|-------------|-------------------------|---------|-------------------------|-------------------|-------------------|-------|-------|-------|-------|---------------|
| <b>LK-M</b> | 5                       | 0,8     | 4                       | 6                 | 5,3               | 55    | 10,7  | 36    | 11,1  | 3             |
|             | 6                       | 1       | 4,8                     | 8                 | 6,3               | 62    | 12,4  | 36    | 12,8  | 3             |
|             | 8                       | 1,25    | 6,5                     | 10                | 8,4               | 74    | 16,7  | 40    | 17,3  | 3             |
|             | 10                      | 1,5     | 8,2                     | 12                | 10,5              | 80    | 20,1  | 45    | 20,8  | 3             |
|             | 12                      | 1,75    | 9,9                     | 14                | 12,6              | 90    | 25,2  | 45    | 26    | 4             |

|                  |                  |                  |
|------------------|------------------|------------------|
| <b>P</b> 1.1-5.1 | <b>M</b> 1.1-4.1 | <b>K</b> 1.1-4.2 |
| <b>N</b> 1.1-5.3 | <b>S</b> 1.1-2.6 | <b>H</b> 1.1-1.2 |

**2 x d<sub>1</sub>**

| GSF<br>2xd <sub>1</sub><br>IKZ-HA<br>TICN | GSF<br>2xd <sub>1</sub><br>IKZ-HB<br>TICN |
|-------------------------------------------|-------------------------------------------|
| <b>GF333706.1050</b>                      | <b>GF333106.1050</b>                      |
| <b>GF333706.1052</b>                      | <b>GF333106.1052</b>                      |
| <b>GF333706.1054</b>                      | <b>GF333106.1054</b>                      |
| <b>GF333706.1056</b>                      | <b>GF333106.1056</b>                      |
| <b>GF333706.1058</b>                      | <b>GF333106.1058</b>                      |

Weitere Ausführungen auf Anfrage  
Further designs upon requestProduct  
Finder $v_c / f_z$ 

M

MF

UNC  
UN, UNSUNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

**SELF-LOCK**

Tr

Zubehör  
Accessories

BGF

ZBGF

**GSF**

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

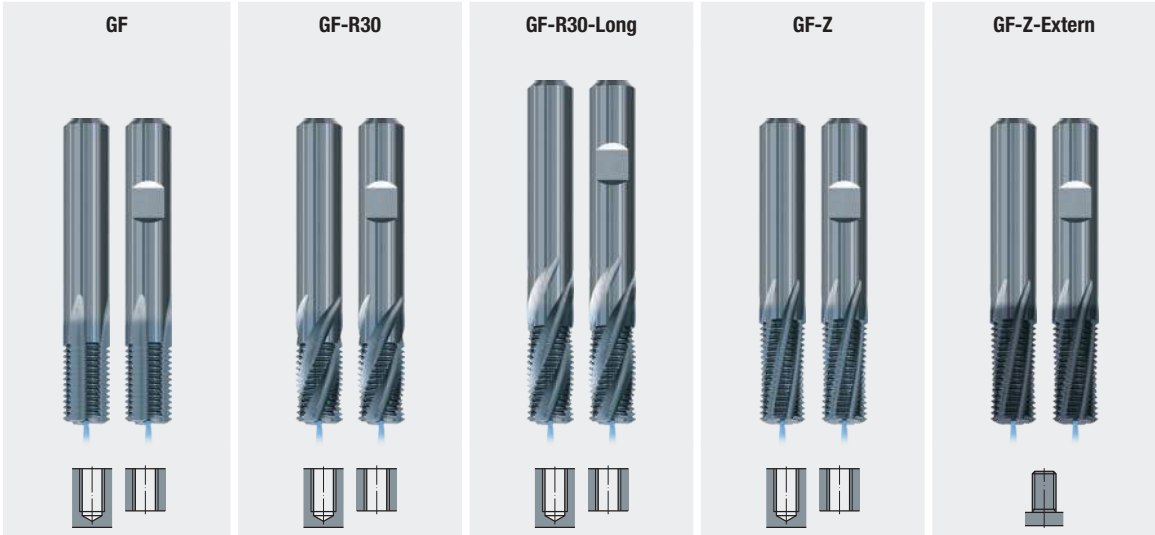
MoSys

Gewindebohrer für Metrisches  
SELF-LOCK-Gewinde  
siehe Seite 290 - 293Taps for Metric SELF-LOCK thread,  
see page 290 - 293

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

|            |
|------------|
| BGF        |
| ZBGF       |
| <b>GSF</b> |
| GF         |
| GF-VZ      |
| GF-KEG     |
| ZGF        |
| ZIRK-GF    |
| Gigant     |
| MoSys      |





Seite · Page

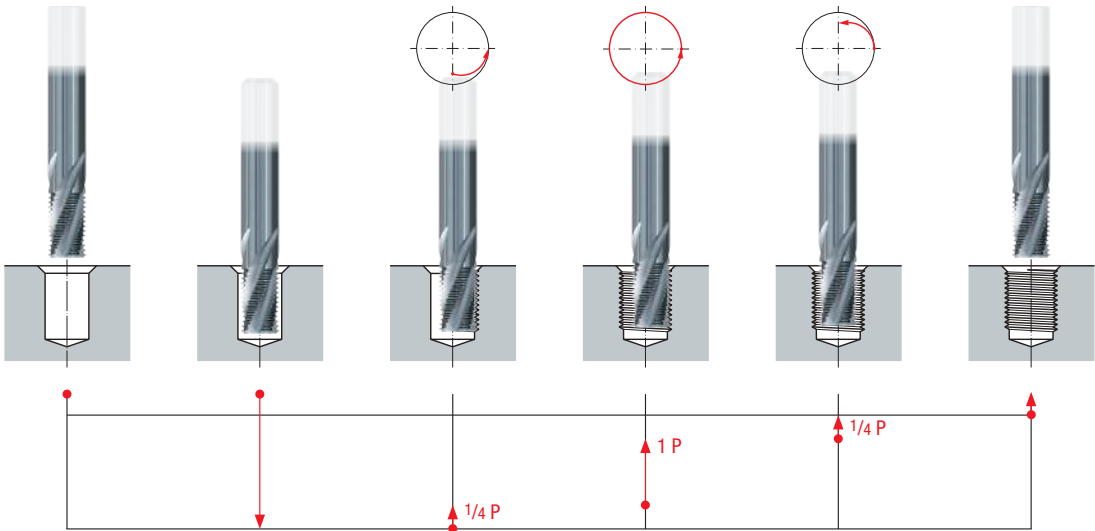
|     |     |     |     |     |                              |
|-----|-----|-----|-----|-----|------------------------------|
| 428 | 429 | 430 | 431 | 432 | <b>M</b>                     |
| 428 | 429 | 430 | 431 | 432 | <b>MF</b>                    |
| 433 |     | 434 |     | 435 | <b>UN</b>                    |
| 436 | 437 |     | 438 |     | <b>G (BSP), Rp (BSPP), W</b> |
| 439 |     |     |     |     | <b>LK-M</b>                  |
| 439 |     |     |     |     | <b>LK-MF</b>                 |
| 440 | 441 |     |     |     | <b>Pg</b>                    |

Mögliche Modifikationen siehe Seite 356 - 357  
Possible modifications, see pages 356 - 357

| Product Finder         |
|------------------------|
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

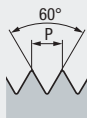
|           |
|-----------|
| BGF       |
| ZBGF      |
| GSF       |
| <b>GF</b> |
| GF-VZ     |
| GF-KEG    |
| ZGF       |
| ZIRK-GF   |
| Gigant    |
| MoSys     |

Gewindefräszyklus · Thread milling cycle



# M, MF

DIN 13



VHM  
Carbide

RH + LH

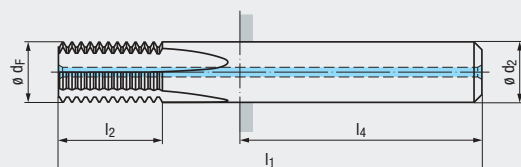
Z3 - Z5



DIN 6535



Für Innengewinde  
For internal threads



Einsatzgebiete – Material  
Applications – material

» 358

GF



P 1.1-5.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.3

|  | P<br>mm | $\varnothing d_1$<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_2$ | $l_4$ | Z<br>(Flutes) | GF<br>IKZ-HA  | GF<br>IKZ-HB  |
|--|---------|-------------------------|-------------------------|-------------------|-------|-------|-------|---------------|---------------|---------------|
|  | 0,5     | $\geq M10$              | 7,9                     | 8                 | 63    | 12,2  | 36    | 3             | GF163701.9506 | GF163101.9506 |
|  | 0,5     | $\geq M12$              | 9,9                     | 10                | 70    | 16,2  | 40    | 4             | GF163811.9506 | GF163211.9506 |
|  | 0,75    | $\geq M11$              | 7,9                     | 8                 | 63    | 12,3  | 36    | 3             | GF163701.9509 | GF163101.9509 |
|  | 0,75    | $\geq M13$              | 9,9                     | 10                | 70    | 16,8  | 40    | 4             | GF163811.9509 | GF163211.9509 |
|  | 1       | $\geq M14$              | 9,9                     | 10                | 70    | 16,4  | 40    | 4             | GF163811.9512 | GF163211.9512 |
|  | 1       | $\geq M16$              | 11,9                    | 12                | 80    | 20,4  | 45    | 4             | GF163721.9512 | GF163121.9512 |
|  | 1       | $\geq M22$              | 15,9                    | 16                | 90    | 25,4  | 48    | 5             | GF163731.9512 | GF163131.9512 |
|  | 1       | $\geq M27$              | 19,9                    | 20                | 105   | 32,4  | 50    | 5             | GF163751.9512 | GF163151.9512 |
|  | 1,5     | $\geq M14$              | 9,9                     | 10                | 70    | 17,2  | 40    | 4             | GF163811.9514 | GF163211.9514 |
|  | 1,5     | $\geq M16$              | 11,9                    | 12                | 80    | 21,7  | 45    | 4             | GF163721.9514 | GF163121.9514 |
|  | 1,5     | $\geq M22$              | 15,9                    | 16                | 90    | 26,2  | 48    | 5             | GF163731.9514 | GF163131.9514 |
|  | 1,5     | $\geq M27$              | 19,9                    | 20                | 105   | 33,7  | 50    | 5             | GF163751.9514 | GF163151.9514 |
|  | 2       | $\geq M22$              | 15,9                    | 16                | 90    | 26,9  | 48    | 5             | GF163731.9516 | GF163131.9516 |
|  | 2       | $\geq M27$              | 19,9                    | 20                | 105   | 32,9  | 50    | 5             | GF163751.9516 | GF163151.9516 |
|  | 3       | $\geq M24$              | 15,9                    | 16                | 90    | 28,3  | 48    | 5             | GF163731.9518 | GF163131.9518 |
|  | 3       | $\geq M30$              | 19,9                    | 20                | 105   | 34,3  | 50    | 5             | GF163751.9518 | GF163151.9518 |

TICN



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

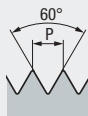
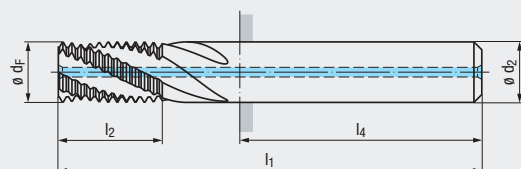
|  | P<br>mm | $\varnothing d_1$<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_2$ | $l_4$ | Z<br>(Flutes) | GF<br>IKZ-HA<br>TICN | GF<br>IKZ-HB<br>TICN |
|--|---------|-------------------------|-------------------------|-------------------|-------|-------|-------|---------------|----------------------|----------------------|
|  | 0,5     | $\geq M10$              | 7,9                     | 8                 | 63    | 12,2  | 36    | 3             | GF163706.9506        | GF163106.9506        |
|  | 0,5     | $\geq M12$              | 9,9                     | 10                | 70    | 16,2  | 40    | 4             | GF163816.9506        | GF163216.9506        |
|  | 0,75    | $\geq M11$              | 7,9                     | 8                 | 63    | 12,3  | 36    | 3             | GF163706.9509        | GF163106.9509        |
|  | 0,75    | $\geq M13$              | 9,9                     | 10                | 70    | 16,8  | 40    | 4             | GF163816.9509        | GF163216.9509        |
|  | 1       | $\geq M14$              | 9,9                     | 10                | 70    | 16,4  | 40    | 4             | GF163816.9512        | GF163216.9512        |
|  | 1       | $\geq M16$              | 11,9                    | 12                | 80    | 20,4  | 45    | 4             | GF163726.9512        | GF163126.9512        |
|  | 1       | $\geq M22$              | 15,9                    | 16                | 90    | 25,4  | 48    | 5             | GF163736.9512        | GF163136.9512        |
|  | 1       | $\geq M27$              | 19,9                    | 20                | 105   | 32,4  | 50    | 5             | GF163756.9512        | GF163156.9512        |
|  | 1,5     | $\geq M14$              | 9,9                     | 10                | 70    | 17,2  | 40    | 4             | GF163816.9514        | GF163216.9514        |
|  | 1,5     | $\geq M16$              | 11,9                    | 12                | 80    | 21,7  | 45    | 4             | GF163726.9514        | GF163126.9514        |
|  | 1,5     | $\geq M22$              | 15,9                    | 16                | 90    | 26,2  | 48    | 5             | GF163736.9514        | GF163136.9514        |
|  | 1,5     | $\geq M27$              | 19,9                    | 20                | 105   | 33,7  | 50    | 5             | GF163756.9514        | GF163156.9514        |
|  | 2       | $\geq M22$              | 15,9                    | 16                | 90    | 26,9  | 48    | 5             | GF163736.9516        | GF163136.9516        |
|  | 2       | $\geq M27$              | 19,9                    | 20                | 105   | 32,9  | 50    | 5             | GF163756.9516        | GF163156.9516        |
|  | 3       | $\geq M24$              | 15,9                    | 16                | 90    | 28,3  | 48    | 5             | GF163736.9518        | GF163136.9518        |
|  | 3       | $\geq M30$              | 19,9                    | 20                | 105   | 34,3  | 50    | 5             | GF163756.9518        | GF163156.9518        |

Weitere Ausführungen auf Anfrage  
Further designs upon request



**M, MF**

DIN 13

Für Innengewinde  
For internal threads**VHM**  
Carbide**R30****RH + LH****Z3 - Z5****DIN 6535****GF-R30**Einsatzgebiete – Material  
Applications – material

» 358

|                  |                  |                           |
|------------------|------------------|---------------------------|
| <b>P</b> 1.1-3.1 | <b>K</b> 1.1-4.2 | <b>N</b> 1.1-1.5, 2.1-2.6 |
| <b>N</b> 3.1-4.2 | <b>N</b> 5.1-5.2 | <b>S</b> 1.1-1.2          |

| P<br>mm | ø d <sub>1</sub><br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | Z<br>(Flutes) | GF<br>R30-IKZ-HA | GF<br>R30-IKZ-HB |
|---------|------------------------|------------------------|------------------|----------------|----------------|----------------|---------------|------------------|------------------|
| 0,5     | ≥ M10                  | 7,9                    | 8                | 63             | 12,2           | 36             | 3             | GF162701.9506    | GF162101.9506    |
| 0,75    | ≥ M11                  | 7,9                    | 8                | 63             | 12,3           | 36             | 3             | GF162701.9509    | GF162101.9509    |
| 1       | ≥ M14                  | 9,9                    | 10               | 70             | 16,4           | 40             | 4             | GF162811.9512    | GF162211.9512    |
| 1       | ≥ M16                  | 11,9                   | 12               | 80             | 20,4           | 45             | 4             | GF162721.9512    | GF162121.9512    |
| 1       | ≥ M22                  | 15,9                   | 16               | 90             | 25,4           | 48             | 5             | GF162731.9512    | GF162131.9512    |
| 1       | ≥ M27                  | 19,9                   | 20               | 105            | 32,4           | 50             | 5             | GF162751.9512    | GF162151.9512    |
| 1,5     | ≥ M14                  | 9,9                    | 10               | 70             | 17,2           | 40             | 4             | GF162811.9514    | GF162211.9514    |
| 1,5     | ≥ M16                  | 11,9                   | 12               | 80             | 21,7           | 45             | 4             | GF162721.9514    | GF162121.9514    |
| 1,5     | ≥ M22                  | 15,9                   | 16               | 90             | 26,2           | 48             | 5             | GF162731.9514    | GF162131.9514    |
| 1,5     | ≥ M27                  | 19,9                   | 20               | 105            | 33,7           | 50             | 5             | GF162751.9514    | GF162151.9514    |
| 2       | ≥ M18                  | 11,9                   | 12               | 80             | 20,9           | 45             | 4             | GF162721.9516    | GF162121.9516    |
| 2       | ≥ M22                  | 15,9                   | 16               | 90             | 26,9           | 48             | 5             | GF162731.9516    | GF162131.9516    |
| 2       | ≥ M27                  | 19,9                   | 20               | 105            | 32,9           | 50             | 5             | GF162751.9516    | GF162151.9516    |
| 3       | ≥ M24                  | 15,9                   | 16               | 90             | 28,3           | 48             | 5             | GF162731.9518    | GF162131.9518    |
| 3       | ≥ M30                  | 19,9                   | 20               | 105            | 34,3           | 50             | 5             | GF162751.9518    | GF162151.9518    |

**TICN**Einsatzgebiete – Material  
Applications – material

» 358

|                  |                  |                       |
|------------------|------------------|-----------------------|
| <b>P</b> 1.1-3.1 | <b>M</b> 1.1-2.1 | <b>K</b> 1.1-4.2      |
| <b>N</b> 1.1-2.7 | <b>N</b> 3.1-5.3 | <b>S</b> 1.1-1.2, 2.1 |

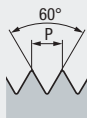
| P<br>mm | ø d <sub>1</sub><br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | Z<br>(Flutes) | GF<br>R30-IKZ-HA<br>TICN | GF<br>R30-IKZ-HB<br>TICN |
|---------|------------------------|------------------------|------------------|----------------|----------------|----------------|---------------|--------------------------|--------------------------|
| 0,5     | ≥ M10                  | 7,9                    | 8                | 63             | 12,2           | 36             | 3             | GF162706.9506            | GF162106.9506            |
| 0,75    | ≥ M11                  | 7,9                    | 8                | 63             | 12,3           | 36             | 3             | GF162706.9509            | GF162106.9509            |
| 1       | ≥ M14                  | 9,9                    | 10               | 70             | 16,4           | 40             | 4             | GF162816.9512            | GF162216.9512            |
| 1       | ≥ M16                  | 11,9                   | 12               | 80             | 20,4           | 45             | 4             | GF162726.9512            | GF162126.9512            |
| 1       | ≥ M22                  | 15,9                   | 16               | 90             | 25,4           | 48             | 5             | GF162736.9512            | GF162136.9512            |
| 1       | ≥ M27                  | 19,9                   | 20               | 105            | 32,4           | 50             | 5             | GF162756.9512            | GF162156.9512            |
| 1,5     | ≥ M14                  | 9,9                    | 10               | 70             | 17,2           | 40             | 4             | GF162816.9514            | GF162216.9514            |
| 1,5     | ≥ M16                  | 11,9                   | 12               | 80             | 21,7           | 45             | 4             | GF162726.9514            | GF162126.9514            |
| 1,5     | ≥ M22                  | 15,9                   | 16               | 90             | 26,2           | 48             | 5             | GF162736.9514            | GF162136.9514            |
| 1,5     | ≥ M27                  | 19,9                   | 20               | 105            | 33,7           | 50             | 5             | GF162756.9514            | GF162156.9514            |
| 2       | ≥ M18                  | 11,9                   | 12               | 80             | 20,9           | 45             | 4             | GF162726.9516            | GF162126.9516            |
| 2       | ≥ M22                  | 15,9                   | 16               | 90             | 26,9           | 48             | 5             | GF162736.9516            | GF162136.9516            |
| 2       | ≥ M27                  | 19,9                   | 20               | 105            | 32,9           | 50             | 5             | GF162756.9516            | GF162156.9516            |
| 3       | ≥ M24                  | 15,9                   | 16               | 90             | 28,3           | 48             | 5             | GF162736.9518            | GF162136.9518            |
| 3       | ≥ M30                  | 19,9                   | 20               | 105            | 34,3           | 50             | 5             | GF162756.9518            | GF162156.9518            |

Weitere Ausführungen auf Anfrage  
Further designs upon request

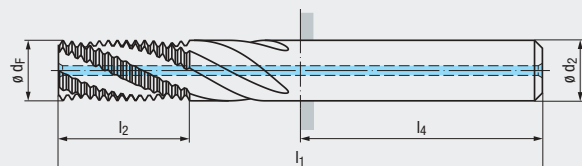
|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |

# M, MF

DIN 13



Für Innengewinde  
For internal threads



VHM  
Carbide

R30

RH + LH

Z4 - Z5



DIN 6535



GF-R30-Long



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-3.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.2

| P<br>mm | ø d <sub>1</sub><br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | Z<br>(Flutes) | GF<br>R30-Long-IKZ-HA | GF<br>R30-Long-IKZ-HB |
|---------|------------------------|------------------------|------------------|----------------|----------------|----------------|---------------|-----------------------|-----------------------|
| 1       | ≥ M14                  | 9,9                    | 10               | 80             | 20,4           | 40             | 4             | GF162911.9512         | GF162311.9512         |
| 1       | ≥ M16                  | 11,9                   | 12               | 90             | 25,4           | 45             | 4             | GF162921.9512         | GF162321.9512         |
| 1       | ≥ M22                  | 15,9                   | 16               | 100            | 32,4           | 48             | 5             | GF162931.9512         | GF162331.9512         |
| 1,5     | ≥ M14                  | 9,9                    | 10               | 80             | 21,7           | 40             | 4             | GF162911.9514         | GF162311.9514         |
| 1,5     | ≥ M16                  | 11,9                   | 12               | 90             | 26,2           | 45             | 4             | GF162921.9514         | GF162321.9514         |
| 1,5     | ≥ M22                  | 15,9                   | 16               | 100            | 33,7           | 48             | 5             | GF162931.9514         | GF162331.9514         |
| 1,5     | ≥ M27                  | 19,9                   | 20               | 115            | 41,2           | 50             | 5             | GF162951.9514         | GF162351.9514         |
| 2       | ≥ M18                  | 11,9                   | 12               | 90             | 26,9           | 45             | 4             | GF162921.9516         | GF162321.9516         |
| 2       | ≥ M22                  | 15,9                   | 16               | 100            | 32,9           | 48             | 5             | GF162931.9516         | GF162331.9516         |
| 2       | ≥ M27                  | 19,9                   | 20               | 115            | 40,9           | 50             | 5             | GF162951.9516         | GF162351.9516         |
| 3       | ≥ M24                  | 15,9                   | 16               | 100            | 34,3           | 48             | 5             | GF162931.9518         | GF162331.9518         |
| 3       | ≥ M30                  | 19,9                   | 20               | 115            | 43,3           | 50             | 5             | GF162951.9518         | GF162351.9518         |

TICN



Einsatzgebiete – Material  
Applications – material

» 358

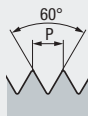
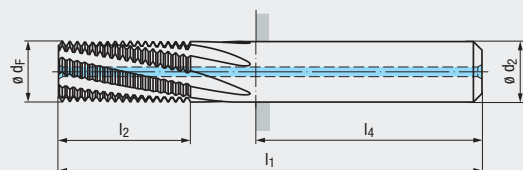
P 1.1-3.1 M 1.1-2.1 K 1.1-4.2  
N 1.1-2.7 N 3.1-5.3 S 1.1-1.2, 2.1

| P<br>mm | ø d <sub>1</sub><br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | Z<br>(Flutes) | GF<br>R30-Long-IKZ-HA<br>TICN | GF<br>R30-Long-IKZ-HB<br>TICN |
|---------|------------------------|------------------------|------------------|----------------|----------------|----------------|---------------|-------------------------------|-------------------------------|
| 1       | ≥ M14                  | 9,9                    | 10               | 80             | 20,4           | 40             | 4             | GF162916.9512                 | GF162316.9512                 |
| 1       | ≥ M16                  | 11,9                   | 12               | 90             | 25,4           | 45             | 4             | GF162926.9512                 | GF162326.9512                 |
| 1       | ≥ M22                  | 15,9                   | 16               | 100            | 32,4           | 48             | 5             | GF162936.9512                 | GF162336.9512                 |
| 1,5     | ≥ M14                  | 9,9                    | 10               | 80             | 21,7           | 40             | 4             | GF162916.9514                 | GF162316.9514                 |
| 1,5     | ≥ M16                  | 11,9                   | 12               | 90             | 26,2           | 45             | 4             | GF162926.9514                 | GF162326.9514                 |
| 1,5     | ≥ M22                  | 15,9                   | 16               | 100            | 33,7           | 48             | 5             | GF162936.9514                 | GF162336.9514                 |
| 1,5     | ≥ M27                  | 19,9                   | 20               | 115            | 41,2           | 50             | 5             | GF162956.9514                 | GF162356.9514                 |
| 2       | ≥ M18                  | 11,9                   | 12               | 90             | 26,9           | 45             | 4             | GF162926.9516                 | GF162326.9516                 |
| 2       | ≥ M22                  | 15,9                   | 16               | 100            | 32,9           | 48             | 5             | GF162936.9516                 | GF162336.9516                 |
| 2       | ≥ M27                  | 19,9                   | 20               | 115            | 40,9           | 50             | 5             | GF162956.9516                 | GF162356.9516                 |
| 3       | ≥ M24                  | 15,9                   | 16               | 100            | 34,3           | 48             | 5             | GF162936.9518                 | GF162336.9518                 |
| 3       | ≥ M30                  | 19,9                   | 20               | 115            | 43,3           | 50             | 5             | GF162956.9518                 | GF162356.9518                 |

Weitere Ausführungen auf Anfrage  
Further designs upon request

**M, MF**

DIN 13

Für Innengewinde  
For internal threads**VHM  
Carbide****R15****RH + LH****DIN 6535****GF-Z**Mit höherer Nutenzahl  
With increased number of flutesEinsatzgebiete – Material  
Applications – material

» 358

| P<br>mm | Ø d <sub>1</sub><br>mm | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | Z<br>(Flutes) |
|---------|------------------------|------------------------|------------------|----------------|----------------|----------------|---------------|
| 1       | ≥ M14                  | 9,9                    | 10               | 70             | 20,4           | 40             | 6             |
| 1,5     | ≥ M16                  | 11,9                   | 12               | 80             | 26,2           | 45             | 6             |
| 2       | ≥ M22                  | 15,9                   | 16               | 90             | 32,9           | 48             | 6             |
| 3       | ≥ M30                  | 19,9                   | 20               | 105            | 43,3           | 50             | 6             |

|                  |                  |                           |
|------------------|------------------|---------------------------|
| <b>P</b> 1.1-5.1 | <b>K</b> 1.1-4.2 | <b>N</b> 1.1-1.5, 2.1-2.6 |
| <b>N</b> 3.1-4.2 | <b>N</b> 5.1-5.2 | <b>S</b> 1.1-1.3          |

**GF-Z  
R15-IKZ-HA****GF-Z  
R15-IKZ-HB**

GF165961.9512

GF165361.9512

GF165971.9514

GF165371.9514

GF165981.9516

GF165381.9516

GF165991.9518

GF165391.9518

**TICN**Einsatzgebiete – Material  
Applications – material

» 358

| P<br>mm | Ø d <sub>1</sub><br>mm | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | Z<br>(Flutes) |
|---------|------------------------|------------------------|------------------|----------------|----------------|----------------|---------------|
| 1       | ≥ M14                  | 9,9                    | 10               | 70             | 20,4           | 40             | 6             |
| 1,5     | ≥ M16                  | 11,9                   | 12               | 80             | 26,2           | 45             | 6             |
| 2       | ≥ M22                  | 15,9                   | 16               | 90             | 32,9           | 48             | 6             |
| 3       | ≥ M30                  | 19,9                   | 20               | 105            | 43,3           | 50             | 6             |

|                  |                  |                  |
|------------------|------------------|------------------|
| <b>P</b> 1.1-5.1 | <b>M</b> 1.1-4.1 | <b>K</b> 1.1-4.2 |
| <b>N</b> 1.1-5.3 | <b>S</b> 1.1-2.6 | <b>H</b> 1.1-1.2 |

**GF-Z  
R15-IKZ-HA  
TICN****GF-Z  
R15-IKZ-HB  
TICN**

GF165966.9512

GF165366.9512

GF165976.9514

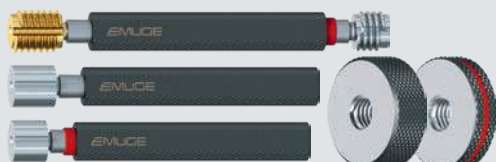
GF165376.9514

GF165986.9516

GF165386.9516

GF165996.9518

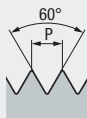
GF165396.9518

Weitere Ausführungen auf Anfrage  
Further designs upon requestGewindelehren  
siehe Seite 541 - 594Thread gauges,  
see page 541 - 594

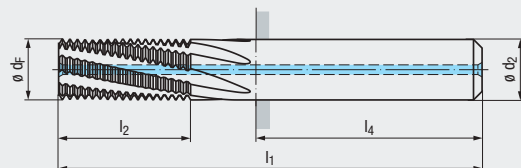
|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |

# M, MF

DIN 13



Für Außengewinde  
For external threads



VHM  
Carbide

TIALN  
86

R15

RH + LH

Z5 - Z9



DIN 6535



$\varnothing d_1$



GF-Z-Extern



Mit höherer Nutenzahl  
With increased number of flutes

new



new



Einsatzgebiete – Material  
Applications – material

» 358

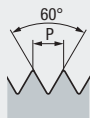
|   |         |   |         |   |         |
|---|---------|---|---------|---|---------|
| P | 1.1-5.1 | M | 1.1-4.1 | K | 1.1-4.2 |
| N | 1.1-5.3 | S | 1.1-2.6 | H | 1.1-1.2 |

| P<br>mm | $\varnothing d_1$<br>mm | $\varnothing d_f$<br>mm | $\varnothing d_2$ | $l_1$ | $l_2$ | $l_4$ | Z<br>(Flutes) | GF-Z<br>R15-Extern-IKZ-HA<br>TIALN-86 | GF-Z<br>R15-Extern-IKZ-HB<br>TIALN-86 |
|---------|-------------------------|-------------------------|-------------------|-------|-------|-------|---------------|---------------------------------------|---------------------------------------|
| 0,5     | $\geq M 5$              | 5,9                     | 6                 | 55    | 12,3  | 36    | 9             | GF1649CC.9506                         | GF1643CC.9506                         |
| 0,75    | $\geq M 5$              | 5,9                     | 6                 | 55    | 12,4  | 36    | 6             | GF1649CC.9509                         | GF1643CC.9509                         |
| 1       | $\geq M 6$              | 7,9                     | 8                 | 63    | 16,5  | 36    | 6             | GF1649BC.9512                         | GF1643BC.9512                         |
| 0,8     | $\geq M 5$              | 5,9                     | 6                 | 55    | 12,4  | 36    | 6             | GF1649CC.9510                         | GF1643CC.9510                         |
| 1       | $\geq M 8$              | 9,9                     | 10                | 70    | 20,5  | 40    | 8             | GF16496C.9512                         | GF16436C.9512                         |
| 1,25    | $\geq M 8$              | 9,9                     | 10                | 70    | 20,6  | 40    | 6             | GF16496C.9513                         | GF16436C.9513                         |
| 1,5     | $\geq M 8$              | 9,9                     | 10                | 70    | 21,8  | 40    | 5             | GF16496C.9514                         | GF16436C.9514                         |
| 1,5     | $\geq M 10$             | 11,9                    | 12                | 80    | 26,3  | 45    | 6             | GF16497C.9514                         | GF16437C.9514                         |
| 2       | $\geq M 10$             | 11,9                    | 12                | 80    | 27    | 45    | 5             | GF16497C.9516                         | GF16437C.9516                         |
| 2       | $\geq M 14$             | 15,9                    | 16                | 90    | 33    | 48    | 6             | GF16498C.9516                         | GF16438C.9516                         |
| 2,5     | $\geq M 14$             | 15,9                    | 16                | 90    | 33,8  | 48    | 5             | GF16498C.9517                         | GF16438C.9517                         |

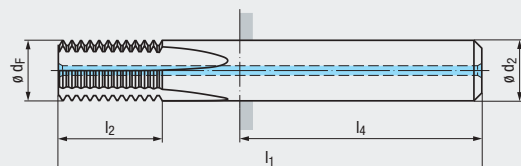
Weitere Ausführungen auf Anfrage  
Further designs upon request

UN

ASME B1.1



Für Innengewinde  
For internal threads

VHM  
Carbide

RH + LH

Z4 - Z5

DIN 6535



GF



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.3

| P<br>Gg/1" (tpi) | ø d <sub>1</sub><br>inch | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | Z<br>(Flutes) | GF<br>IKZ-HA  | GF<br>IKZ-HB  |
|------------------|--------------------------|------------------------|------------------|----------------|----------------|----------------|---------------|---------------|---------------|
| 24               | ≥ 1/2                    | 9,9                    | 10               | 70             | 16,3           | 40             | 4             | GF163811.9579 | GF163211.9579 |
| 20               | ≥ 1/2                    | 9,9                    | 10               | 70             | 17,1           | 40             | 4             | GF163811.9580 | GF163211.9580 |
| 20               | ≥ 11/16                  | 11,9                   | 12               | 80             | 20,9           | 45             | 4             | GF163721.9580 | GF163121.9580 |
| 20               | ≥ 7/8                    | 15,9                   | 16               | 90             | 26             | 48             | 5             | GF163731.9580 | GF163131.9580 |
| 20               | ≥ 1"                     | 19,9                   | 20               | 105            | 32,3           | 50             | 5             | GF163751.9580 | GF163151.9580 |
| 18               | ≥ 1/2                    | 9,9                    | 10               | 70             | 17,6           | 40             | 4             | GF163811.9581 | GF163211.9581 |
| 16               | ≥ 1/2                    | 9,9                    | 10               | 70             | 16,6           | 40             | 4             | GF163811.9582 | GF163211.9582 |
| 16               | ≥ 11/16                  | 11,9                   | 12               | 80             | 21,3           | 45             | 4             | GF163721.9582 | GF163121.9582 |
| 16               | ≥ 7/8                    | 15,9                   | 16               | 90             | 26,1           | 48             | 5             | GF163731.9582 | GF163131.9582 |
| 16               | ≥ 1"                     | 19,9                   | 20               | 105            | 32,5           | 50             | 5             | GF163751.9582 | GF163151.9582 |
| 14               | ≥ 7/8                    | 15,9                   | 16               | 90             | 26,2           | 48             | 5             | GF163731.9583 | GF163131.9583 |
| 12               | ≥ 11/16                  | 11,9                   | 12               | 80             | 22,1           | 45             | 4             | GF163721.9585 | GF163121.9585 |
| 12               | ≥ 7/8                    | 15,9                   | 16               | 90             | 26,3           | 48             | 5             | GF163731.9585 | GF163131.9585 |
| 12               | ≥ 1"                     | 19,9                   | 20               | 105            | 32,7           | 50             | 5             | GF163751.9585 | GF163151.9585 |
| 10               | ≥ 11/16                  | 11,9                   | 12               | 80             | 21,4           | 45             | 4             | GF163721.9587 | GF163121.9587 |
| 9                | ≥ 11/16                  | 11,9                   | 12               | 80             | 21             | 45             | 4             | GF163721.9588 | GF163121.9588 |
| 8                | ≥ 7/8                    | 15,9                   | 16               | 90             | 26,8           | 48             | 5             | GF163731.9589 | GF163131.9589 |
| 8                | ≥ 1"                     | 19,9                   | 20               | 105            | 33,2           | 50             | 5             | GF163751.9589 | GF163151.9589 |
| 6                | ≥ 1"                     | 19,9                   | 20               | 105            | 35,8           | 50             | 5             | GF163751.9591 | GF163151.9591 |

TICN



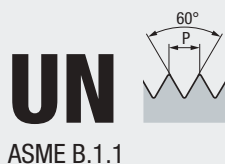
Einsatzgebiete – Material  
Applications – material

» 358

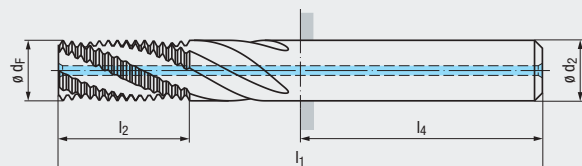
P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

| P<br>Gg/1" (tpi) | ø d <sub>1</sub><br>inch | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | Z<br>(Flutes) | GF<br>IKZ-HA<br>TICN | GF<br>IKZ-HB<br>TICN |
|------------------|--------------------------|------------------------|------------------|----------------|----------------|----------------|---------------|----------------------|----------------------|
| 24               | ≥ 1/2                    | 9,9                    | 10               | 70             | 16,3           | 40             | 4             | GF163816.9579        | GF163216.9579        |
| 20               | ≥ 1/2                    | 9,9                    | 10               | 70             | 17,1           | 40             | 4             | GF163816.9580        | GF163216.9580        |
| 20               | ≥ 11/16                  | 11,9                   | 12               | 80             | 20,9           | 45             | 4             | GF163726.9580        | GF163126.9580        |
| 20               | ≥ 7/8                    | 15,9                   | 16               | 90             | 26             | 48             | 5             | GF163736.9580        | GF163136.9580        |
| 20               | ≥ 1"                     | 19,9                   | 20               | 105            | 32,3           | 50             | 5             | GF163756.9580        | GF163156.9580        |
| 18               | ≥ 1/2                    | 9,9                    | 10               | 70             | 17,6           | 40             | 4             | GF163816.9581        | GF163216.9581        |
| 16               | ≥ 1/2                    | 9,9                    | 10               | 70             | 16,6           | 40             | 4             | GF163816.9582        | GF163216.9582        |
| 16               | ≥ 11/16                  | 11,9                   | 12               | 80             | 21,3           | 45             | 4             | GF163726.9582        | GF163126.9582        |
| 16               | ≥ 7/8                    | 15,9                   | 16               | 90             | 26,1           | 48             | 5             | GF163736.9582        | GF163136.9582        |
| 16               | ≥ 1"                     | 19,9                   | 20               | 105            | 32,5           | 50             | 5             | GF163756.9582        | GF163156.9582        |
| 14               | ≥ 7/8                    | 15,9                   | 16               | 90             | 26,2           | 48             | 5             | GF163736.9583        | GF163136.9583        |
| 12               | ≥ 11/16                  | 11,9                   | 12               | 80             | 22,1           | 45             | 4             | GF163726.9585        | GF163126.9585        |
| 12               | ≥ 7/8                    | 15,9                   | 16               | 90             | 26,3           | 48             | 5             | GF163736.9585        | GF163136.9585        |
| 12               | ≥ 1"                     | 19,9                   | 20               | 105            | 32,7           | 50             | 5             | GF163756.9585        | GF163156.9585        |
| 10               | ≥ 11/16                  | 11,9                   | 12               | 80             | 21,4           | 45             | 4             | GF163726.9587        | GF163126.9587        |
| 9                | ≥ 11/16                  | 11,9                   | 12               | 80             | 21             | 45             | 4             | GF163726.9588        | GF163126.9588        |
| 8                | ≥ 7/8                    | 15,9                   | 16               | 90             | 26,8           | 48             | 5             | GF163736.9589        | GF163136.9589        |
| 8                | ≥ 1"                     | 19,9                   | 20               | 105            | 33,2           | 50             | 5             | GF163756.9589        | GF163156.9589        |
| 6                | ≥ 1"                     | 19,9                   | 20               | 105            | 35,8           | 50             | 5             | GF163756.9591        | GF163156.9591        |





Für Innengewinde  
For internal threads



VHM  
Carbide

R30

RH + LH

Z4 - Z5

DIN 6535



GF-R30-Long



Einsatzgebiete – Material  
Applications – material

358

P 1.1-3.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.2

| P<br>Gg/1" (tpi) | $\varnothing d_1$<br>inch | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_2$ | $l_4$ | Z<br>(Flutes) | GF<br>R30-Long-IKZ-HA | GF<br>R30-Long-IKZ-HB |
|------------------|---------------------------|-------------------------|-------------------|-------|-------|-------|---------------|-----------------------|-----------------------|
| 24               | $\geq 1/2$                | 9,9                     | 10                | 80    | 20,6  | 40    | 4             | GF162911.9579         | GF162311.9579         |
| 20               | $\geq 1/2$                | 9,9                     | 10                | 80    | 20,9  | 40    | 4             | GF162911.9580         | GF162311.9580         |
| 20               | $\geq 11/16$              | 11,9                    | 12                | 90    | 26    | 45    | 4             | GF162921.9580         | GF162321.9580         |
| 20               | $\geq 7/8$                | 15,9                    | 16                | 100   | 32,3  | 48    | 5             | GF162931.9580         | GF162331.9580         |
| 20               | $\geq 1"$                 | 19,9                    | 20                | 115   | 41,2  | 50    | 5             | GF162951.9580         | GF162351.9580         |
| 18               | $\geq 1/2$                | 9,9                     | 10                | 80    | 20,4  | 40    | 4             | GF162911.9581         | GF162311.9581         |
| 16               | $\geq 1/2$                | 9,9                     | 10                | 80    | 21,3  | 40    | 4             | GF162911.9582         | GF162311.9582         |
| 16               | $\geq 11/16$              | 11,9                    | 12                | 90    | 26,1  | 45    | 4             | GF162921.9582         | GF162321.9582         |
| 16               | $\geq 7/8$                | 15,9                    | 16                | 100   | 32,5  | 48    | 5             | GF162931.9582         | GF162331.9582         |
| 16               | $\geq 1"$                 | 19,9                    | 20                | 115   | 40,4  | 50    | 5             | GF162951.9582         | GF162351.9582         |
| 14               | $\geq 7/8$                | 15,9                    | 16                | 100   | 33,4  | 48    | 5             | GF162931.9583         | GF162331.9583         |
| 12               | $\geq 11/16$              | 11,9                    | 12                | 90    | 26,3  | 45    | 4             | GF162921.9585         | GF162321.9585         |
| 12               | $\geq 7/8$                | 15,9                    | 16                | 100   | 32,7  | 48    | 5             | GF162931.9585         | GF162331.9585         |
| 12               | $\geq 1"$                 | 19,9                    | 20                | 115   | 41,2  | 50    | 5             | GF162951.9585         | GF162351.9585         |
| 10               | $\geq 11/16$              | 11,9                    | 12                | 90    | 26,5  | 45    | 4             | GF162921.9587         | GF162321.9587         |
| 9                | $\geq 11/16$              | 11,9                    | 12                | 90    | 26,6  | 45    | 4             | GF162921.9588         | GF162321.9588         |
| 8                | $\geq 7/8$                | 15,9                    | 16                | 100   | 33,1  | 48    | 5             | GF162931.9589         | GF162331.9589         |
| 8                | $\geq 1"$                 | 19,9                    | 20                | 115   | 42,7  | 50    | 5             | GF162951.9589         | GF162351.9589         |
| 6                | $\geq 1"$                 | 19,9                    | 20                | 115   | 44,3  | 50    | 5             | GF162951.9591         | GF162351.9591         |

TICN



Einsatzgebiete – Material  
Applications – material

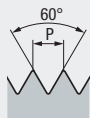
358

P 1.1-3.1 M 1.1-2.1 K 1.1-4.2  
N 1.1-2.7 N 3.1-5.3 S 1.1-1.2, 2.1

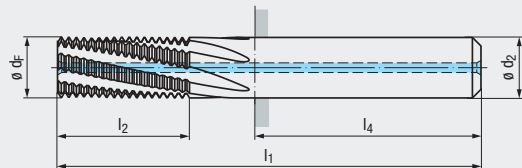
| P<br>Gg/1" (tpi) | $\varnothing d_1$<br>inch | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_2$ | $l_4$ | Z<br>(Flutes) | GF<br>R30-Long-IKZ-HA<br>TICN | GF<br>R30-Long-IKZ-HB<br>TICN |
|------------------|---------------------------|-------------------------|-------------------|-------|-------|-------|---------------|-------------------------------|-------------------------------|
| 24               | $\geq 1/2$                | 9,9                     | 10                | 80    | 20,6  | 40    | 4             | GF162916.9579                 | GF162316.9579                 |
| 20               | $\geq 1/2$                | 9,9                     | 10                | 80    | 20,9  | 40    | 4             | GF162916.9580                 | GF162316.9580                 |
| 20               | $\geq 11/16$              | 11,9                    | 12                | 90    | 26    | 45    | 4             | GF162926.9580                 | GF162326.9580                 |
| 20               | $\geq 7/8$                | 15,9                    | 16                | 100   | 32,3  | 48    | 5             | GF162936.9580                 | GF162336.9580                 |
| 20               | $\geq 1"$                 | 19,9                    | 20                | 115   | 41,2  | 50    | 5             | GF162956.9580                 | GF162356.9580                 |
| 18               | $\geq 1/2$                | 9,9                     | 10                | 80    | 20,4  | 40    | 4             | GF162916.9581                 | GF162316.9581                 |
| 16               | $\geq 1/2$                | 9,9                     | 10                | 80    | 21,3  | 40    | 4             | GF162916.9582                 | GF162316.9582                 |
| 16               | $\geq 11/16$              | 11,9                    | 12                | 90    | 26,1  | 45    | 4             | GF162926.9582                 | GF162326.9582                 |
| 16               | $\geq 7/8$                | 15,9                    | 16                | 100   | 32,5  | 48    | 5             | GF162936.9582                 | GF162336.9582                 |
| 16               | $\geq 1"$                 | 19,9                    | 20                | 115   | 40,4  | 50    | 5             | GF162956.9582                 | GF162356.9582                 |
| 14               | $\geq 7/8$                | 15,9                    | 16                | 100   | 33,4  | 48    | 5             | GF162936.9583                 | GF162336.9583                 |
| 12               | $\geq 11/16$              | 11,9                    | 12                | 90    | 26,3  | 45    | 4             | GF162926.9585                 | GF162326.9585                 |
| 12               | $\geq 7/8$                | 15,9                    | 16                | 100   | 32,7  | 48    | 5             | GF162936.9585                 | GF162336.9585                 |
| 12               | $\geq 1"$                 | 19,9                    | 20                | 115   | 41,2  | 50    | 5             | GF162956.9585                 | GF162356.9585                 |
| 10               | $\geq 11/16$              | 11,9                    | 12                | 90    | 26,5  | 45    | 4             | GF162926.9587                 | GF162326.9587                 |
| 9                | $\geq 11/16$              | 11,9                    | 12                | 90    | 26,6  | 45    | 4             | GF162926.9588                 | GF162326.9588                 |
| 8                | $\geq 7/8$                | 15,9                    | 16                | 100   | 33,1  | 48    | 5             | GF162936.9589                 | GF162336.9589                 |
| 8                | $\geq 1"$                 | 19,9                    | 20                | 115   | 42,7  | 50    | 5             | GF162956.9589                 | GF162356.9589                 |
| 6                | $\geq 1"$                 | 19,9                    | 20                | 115   | 44,3  | 50    | 5             | GF162956.9591                 | GF162356.9591                 |

UN

ASME B.1.1



Für Außengewinde  
For external threads

VHM  
CarbideTIALN  
86

R15

RH + LH

Z4 - Z7

DIN 6535

HA  
HB

GF-Z-Extern



Mit höherer Nutenzahl  
With increased number of flutes

new



new



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

| P<br>Gg/1" (tpi) | ø d <sub>1</sub><br>inch | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | Z<br>(Flutes) | GF-Z<br>R15-Extern-IKZ-HA<br>TIALN-86 | GF-Z<br>R15-Extern-IKZ-HB<br>TIALN-86 |
|------------------|--------------------------|------------------------|------------------|----------------|----------------|----------------|---------------|---------------------------------------|---------------------------------------|
| 32               | ≥ Nr.10                  | 5,9                    | 6                | 55             | 12,3           | 36             | 6             | GF1649CC.9577                         | GF1643CC.9577                         |
| 28               | ≥ Nr.12                  | 7,9                    | 8                | 63             | 16,8           | 36             | 7             | GF1649BC.9578                         | GF1643BC.9578                         |
| 24               | ≥ Nr.12                  | 7,9                    | 8                | 63             | 16,4           | 36             | 6             | GF1649BC.9579                         | GF1643BC.9579                         |
| 20               | ≥ 1/4                    | 7,9                    | 8                | 63             | 17,1           | 36             | 5             | GF1649BC.9580                         | GF1643BC.9580                         |
| 18               | ≥ 5/16                   | 9,9                    | 10               | 70             | 20,5           | 40             | 5             | GF16496C.9581                         | GF16436C.9581                         |
| 16               | ≥ 3/8                    | 9,9                    | 10               | 70             | 21,4           | 40             | 5             | GF16496C.9582                         | GF16436C.9582                         |
| 16               | ≥ 7/16                   | 11,9                   | 12               | 80             | 26,2           | 45             | 6             | GF16497C.9582                         | GF16437C.9582                         |
| 14               | ≥ 7/16                   | 11,9                   | 12               | 80             | 26,3           | 45             | 5             | GF16497C.9583                         | GF16437C.9583                         |
| 12               | ≥ 9/16                   | 11,9                   | 12               | 80             | 26,5           | 45             | 4             | GF16497C.9585                         | GF16437C.9585                         |
| 12               | ≥ 9/16                   | 15,9                   | 16               | 90             | 32,8           | 48             | 6             | GF16498C.9585                         | GF16438C.9585                         |
| 10               | ≥ 3/4                    | 15,9                   | 16               | 90             | 34,3           | 48             | 5             | GF16498C.9587                         | GF16438C.9587                         |

Weitere Ausführungen auf Anfrage  
Further designs upon request

Product  
Finderv<sub>c</sub> / f<sub>z</sub>

M

MF

UNC

UN, UNS

UNF

UNEF

G, Rp

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör

Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys

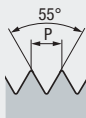




|                    |
|--------------------|
| Product Finder     |
| $v_c / f_z$        |
| M                  |
| MF                 |
| UNC<br>UN, UNS     |
| UNF<br>UNEF        |
| G, Rp              |
| NPT, NPTF<br>Rc, W |

# G (BSP), Rp (BSPP), W

DIN EN ISO 228, DIN EN 10226-1, ISO 7/1, BS 84



VHM  
Carbide

RH + LH

Z4 - Z5

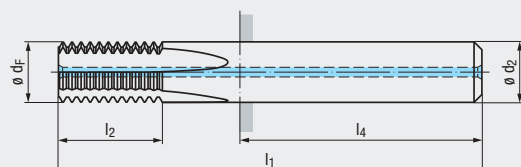


DIN 6535



Für Innen- und Außengewinde

For internal and external threads



Einsatzgebiete – Material

Applications – material

» 358

|   |         |   |         |   |                  |
|---|---------|---|---------|---|------------------|
| P | 1.1-5.1 | K | 1.1-4.2 | N | 1.1-1.5, 2.1-2.6 |
| N | 3.1-4.2 | N | 5.1-5.2 | S | 1.1-1.3          |

GF  
IKZ-HA

GF  
IKZ-HB

GF163811.9545  
GF163731.9548  
GF163731.9550  
GF163751.9550

GF163211.9545  
GF163131.9548  
GF163131.9550  
GF163151.9550

|        |
|--------|
| BGF    |
| ZBGF   |
| GSF    |
| GF     |
| GF-VZ  |
| GF-KEG |

TICN



Einsatzgebiete – Material

Applications – material

» 358

|   |         |   |         |   |         |
|---|---------|---|---------|---|---------|
| P | 1.1-5.1 | M | 1.1-4.1 | K | 1.1-4.2 |
| N | 1.1-5.3 | S | 1.1-2.6 | H | 1.1-1.2 |

GF  
IKZ-HA  
TICN

GF  
IKZ-HB  
TICN

GF163816.9545  
GF163736.9548  
GF163736.9550  
GF163756.9550

GF163216.9545  
GF163136.9548  
GF163136.9550  
GF163156.9550

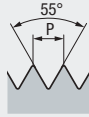
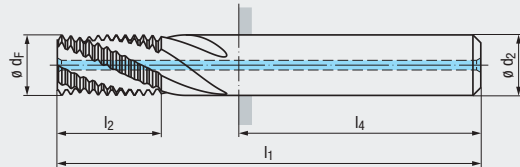
1) Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde  
Diameter related to internal pipe thread resp. external pipe thread

Weitere Ausführungen auf Anfrage  
Further designs upon request



**G (BSP), Rp (BSPP), W**

DIN EN ISO 228, DIN EN 10226-1, ISO 7/1, BS 84

Für Innen- und Außengewinde  
For internal and external threads**VHM  
Carbide****R30****RH + LH****Z4 - Z5****DIN 6535****GF-R30**Einsatzgebiete – Material  
Applications – material

» 358

|                  |                  |                           |
|------------------|------------------|---------------------------|
| <b>P</b> 1.1-3.1 | <b>K</b> 1.1-4.2 | <b>N</b> 1.1-1.5, 2.1-2.6 |
| <b>N</b> 3.1-4.2 | <b>N</b> 5.1-5.2 | <b>S</b> 1.1-1.2          |

| P<br>Gg/1" (tpi) | ø d <sub>1</sub><br>inch | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | Z<br>(Flutes) | GF<br>R30-1KZ-HA | GF<br>R30-1KZ-HB |
|------------------|--------------------------|------------------------|------------------|----------------|----------------|----------------|---------------|------------------|------------------|
| 19               | ≥ 1/4                    | 9,9                    | 10               | 70             | 16,7           | 40             | 4             | GF162811.9545    | GF162211.9545    |
| 14               | ≥ 1/2                    | 11,9                   | 12               | 80             | 20,9           | 45             | 4             | GF162721.9548    | GF162121.9548    |
| 14               | ≥ 1/2                    | 15,9                   | 16               | 90             | 26,3           | 48             | 5             | GF162731.9548    | GF162131.9548    |
| 11               | ≥ 1"                     | 15,9                   | 16               | 90             | 26,6           | 48             | 5             | GF162731.9550    | GF162131.9550    |
| 11               | ≥ 1"                     | 19,9                   | 20               | 105            | 33,5           | 50             | 5             | GF162751.9550    | GF162151.9550    |

**TICN**Einsatzgebiete – Material  
Applications – material

» 358

|                  |                  |                       |
|------------------|------------------|-----------------------|
| <b>P</b> 1.1-3.1 | <b>M</b> 1.1-2.1 | <b>K</b> 1.1-4.2      |
| <b>N</b> 1.1-2.7 | <b>N</b> 3.1-5.3 | <b>S</b> 1.1-1.2, 2.1 |

| P<br>Gg/1" (tpi) | ø d <sub>1</sub><br>inch | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | Z<br>(Flutes) | GF<br>R30-1KZ-HA<br>TICN | GF<br>R30-1KZ-HB<br>TICN |
|------------------|--------------------------|------------------------|------------------|----------------|----------------|----------------|---------------|--------------------------|--------------------------|
| 19               | ≥ 1/4                    | 9,9                    | 10               | 70             | 16,7           | 40             | 4             | GF162816.9545            | GF162216.9545            |
| 14               | ≥ 1/2                    | 11,9                   | 12               | 80             | 20,9           | 45             | 4             | GF162726.9548            | GF162126.9548            |
| 14               | ≥ 1/2                    | 15,9                   | 16               | 90             | 26,3           | 48             | 5             | GF162736.9548            | GF162136.9548            |
| 11               | ≥ 1"                     | 15,9                   | 16               | 90             | 26,6           | 48             | 5             | GF162736.9550            | GF162136.9550            |
| 11               | ≥ 1"                     | 19,9                   | 20               | 105            | 33,5           | 50             | 5             | GF162756.9550            | GF162156.9550            |

<sup>1)</sup> Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde  
Diameter related to internal pipe thread resp. external pipe thread

Weitere Ausführungen auf Anfrage  
Further designs upon request

Product  
Finderv<sub>c</sub> / f<sub>z</sub>

M

MF

UNC

UN, UNS

UNF

UNEF

G, Rp

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör

Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

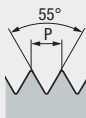
MoSys



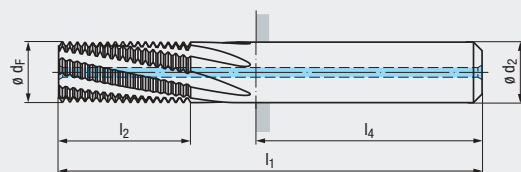
|                        |
|------------------------|
| Product Finder         |
| $V_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |

# G (BSP), Rp (BSPP), W

DIN EN ISO 228, DIN EN 10226-1, ISO 7/1, BS 84



Für Innen- und Außengewinde  
For internal and external threads



VHM  
Carbide

R15

RH + LH

Z5 - Z8



DIN 6535



GF-Z



Mit höherer Nutenzahl  
With increased number of flutes



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.3

| P<br>Gg/1" (tpi) | $\varnothing d_1$<br>inch | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_2$ | $l_4$ | Z<br>(Flutes) |
|------------------|---------------------------|-------------------------|-------------------|-------|-------|-------|---------------|
| 19               | $\geq 1/4$                | 9,9                     | 10                | 70    | 20,7  | 40    | 6             |
| 14               | $\geq 1/2$                | 11,9                    | 12                | 80    | 26,3  | 45    | 5             |
| 14               | $\geq 1/2$                | 15,9                    | 16                | 90    | 33,6  | 48    | 6             |
| 14               | $\geq 3/4$                | 19,9                    | 20                | 105   | 40,8  | 50    | 8             |
| 11               | $\geq 1"$                 | 15,9                    | 16                | 90    | 33,5  | 48    | 5             |
| 11               | $\geq 1"$                 | 19,9                    | 20                | 105   | 42,7  | 50    | 6             |

GF-Z  
R15-IKZ-HA

GF-Z  
R15-IKZ-HB

|               |               |
|---------------|---------------|
| GF165961.9545 | GF165361.9545 |
| GF165971.9548 | GF165371.9548 |
| GF165981.9548 | GF165381.9548 |
| GF165991.9548 | GF165391.9548 |
| GF165981.9550 | GF165381.9550 |
| GF165991.9550 | GF165391.9550 |

TICN



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

| P<br>Gg/1" (tpi) | $\varnothing d_1$<br>inch | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_2$ | $l_4$ | Z<br>(Flutes) |
|------------------|---------------------------|-------------------------|-------------------|-------|-------|-------|---------------|
| 19               | $\geq 1/4$                | 9,9                     | 10                | 70    | 20,7  | 40    | 6             |
| 14               | $\geq 1/2$                | 11,9                    | 12                | 80    | 26,3  | 45    | 5             |
| 14               | $\geq 1/2$                | 15,9                    | 16                | 90    | 33,6  | 48    | 6             |
| 14               | $\geq 3/4$                | 19,9                    | 20                | 105   | 40,8  | 50    | 8             |
| 11               | $\geq 1"$                 | 15,9                    | 16                | 90    | 33,5  | 48    | 5             |
| 11               | $\geq 1"$                 | 19,9                    | 20                | 105   | 42,7  | 50    | 6             |

GF-Z  
R15-IKZ-HA  
TICN

GF-Z  
R15-IKZ-HB  
TICN

|               |               |
|---------------|---------------|
| GF165966.9545 | GF165366.9545 |
| GF165976.9548 | GF165376.9548 |
| GF165986.9548 | GF165386.9548 |
| GF165996.9548 | GF165396.9548 |
| GF165986.9550 | GF165386.9550 |
| GF165996.9550 | GF165396.9550 |

1) Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde  
Diameter related to internal pipe thread resp. external pipe thread

Weitere Ausführungen auf Anfrage  
Further designs upon request

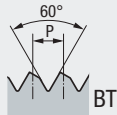


Gewinde-Tiefenlehrdorne  
siehe Seite 588 - 591

Thread depth plug gauges,  
see page 588 - 591

# LK-M, LK-MF

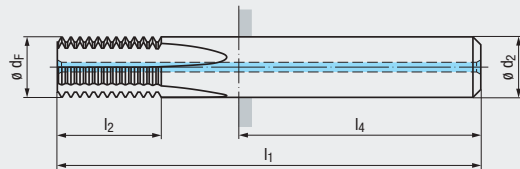
EMUGE-Norm · EMUGE Standard

VHM  
Carbide

RH + LH

Z4 - Z5

DIN 6535

Für Innengewinde  
For internal threadsEinsatzgebiete – Material  
Applications – material

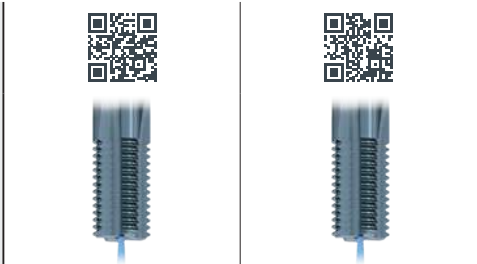
» 358

| P<br>mm | ø d <sub>1</sub><br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | Z<br>(Flutes) |
|---------|------------------------|------------------------|------------------|----------------|----------------|----------------|---------------|
| 1       | ≥ LK-M14               | 9,9                    | 10               | 70             | 16,4           | 40             | 4             |
| 1       | ≥ LK-M16               | 11,9                   | 12               | 80             | 20,4           | 45             | 4             |
| 1,5     | ≥ LK-M14               | 9,9                    | 10               | 70             | 17,1           | 40             | 4             |
| 1,5     | ≥ LK-M16               | 11,9                   | 12               | 80             | 21,6           | 45             | 4             |
| 2       | ≥ LK-M22               | 15,9                   | 16               | 90             | 26,7           | 48             | 5             |
| 3       | ≥ LK-M30               | 19,9                   | 20               | 105            | 34,1           | 50             | 5             |

P 1.1-5.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.3

| GF<br>IKZ-HA  | GF<br>IKZ-HB  |
|---------------|---------------|
| GF163811.9757 | GF163211.9757 |
| GF163721.9757 | GF163121.9757 |
| GF163811.9664 | GF163211.9664 |
| GF163721.9664 | GF163121.9664 |
| GF163731.9705 | GF163131.9705 |
| GF163751.9767 | GF163151.9767 |

TICN

Einsatzgebiete – Material  
Applications – material

» 358

| P<br>mm | ø d <sub>1</sub><br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>4</sub> | Z<br>(Flutes) |
|---------|------------------------|------------------------|------------------|----------------|----------------|----------------|---------------|
| 1       | ≥ LK-M14               | 9,9                    | 10               | 70             | 16,4           | 40             | 4             |
| 1       | ≥ LK-M16               | 11,9                   | 12               | 80             | 20,4           | 45             | 4             |
| 1,5     | ≥ LK-M14               | 9,9                    | 10               | 70             | 17,1           | 40             | 4             |
| 1,5     | ≥ LK-M16               | 11,9                   | 12               | 80             | 21,6           | 45             | 4             |
| 2       | ≥ LK-M22               | 15,9                   | 16               | 90             | 26,7           | 48             | 5             |
| 3       | ≥ LK-M30               | 19,9                   | 20               | 105            | 34,1           | 50             | 5             |

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

| GF<br>IKZ-HA<br>TICN | GF<br>IKZ-HB<br>TICN |
|----------------------|----------------------|
| GF163816.9757        | GF163216.9757        |
| GF163726.9757        | GF163126.9757        |
| GF163816.9664        | GF163216.9664        |
| GF163726.9664        | GF163126.9664        |
| GF163736.9705        | GF163136.9705        |
| GF163756.9767        | GF163156.9767        |

Weitere Ausführungen auf Anfrage  
Further designs upon requestProduct  
Finderv<sub>c</sub> / f<sub>z</sub>

M

MF

UNC  
UN, UNSUNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

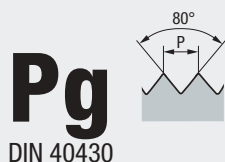
ZIRK-GF

Gigant

MoSys



|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| <b>Pg</b>              |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |



VHM  
Carbide

RH + LH

Z4

DIN 6535

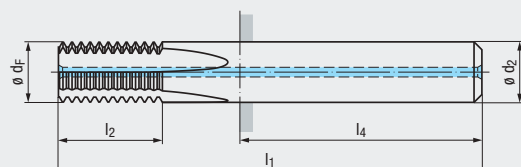
HA  
HB



GF



Für Innen- und Außengewinde  
For internal and external threads



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.3

Nenngröße

Nom. size  
 $\phi d_1^{1)}$

P

Gg/1" (tpi)

$\phi d_F$

mm

$\phi d_2$

mm

$l_1$

mm

$l_2$

mm

$l_4$

mm

Z

(Flutes)

**Pg**

7

20

9,9

10

70

17,1

40

4

9

18

11,9

12

80

20,5

45

4

21

16

11,9

12

80

21,4

45

4

GF

IKZ-HA

GF163811.9661

GF163721.9662

GF163721.9663

GF

IKZ-HB

GF163211.9661

GF163121.9662

GF163121.9663

|           |
|-----------|
| BGF       |
| ZBGF      |
| GSF       |
| <b>GF</b> |
| GF-VZ     |
| GF-KEG    |
| ZGF       |
| ZIRK-GF   |
| Gigant    |
| MoSys     |

TICN



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

Nenngröße

Nom. size  
 $\phi d_1^{1)}$

P

Gg/1" (tpi)

$\phi d_F$

mm

$\phi d_2$

mm

$l_1$

mm

$l_2$

mm

$l_4$

mm

Z

(Flutes)

**Pg**

7

20

9,9

10

70

17,1

40

4

9

18

11,9

12

80

20,5

45

4

21

16

11,9

12

80

21,4

45

4

GF

IKZ-HA

TICN

GF163816.9661

GF163726.9662

GF163726.9663

GF

IKZ-HB

TICN

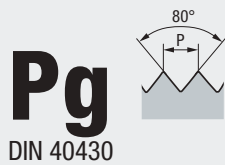
GF163216.9661

GF163126.9662

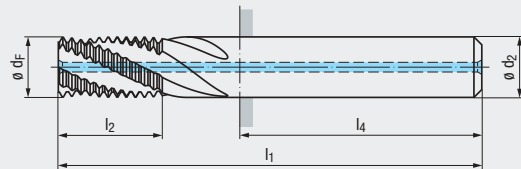
GF163126.9663

1) Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde  
Diameter related to internal pipe thread resp. external pipe thread

Weitere Ausführungen auf Anfrage  
Further designs upon request



Für Innen- und Außengewinde  
For internal and external threads



VHM  
Carbide

R30

RH + LH

Z4

DIN 6535



GF-R30



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-3.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.2

Nenngröße

Nom. size  
ø d<sub>1</sub> 1)

P  
Gg/1" (tpi)

ø d<sub>F</sub>  
mm

ø d<sub>2</sub>

l<sub>1</sub>

l<sub>2</sub>

l<sub>4</sub>

Z  
(Flutes)

|           |    |    |      |    |    |      |    |   |
|-----------|----|----|------|----|----|------|----|---|
| <b>Pg</b> | 7  | 20 | 9,9  | 10 | 70 | 17,1 | 40 | 4 |
|           | 9  | 18 | 11,9 | 12 | 80 | 20,5 | 45 | 4 |
|           | 21 | 16 | 11,9 | 12 | 80 | 21,4 | 45 | 4 |

GF  
R30-IKZ-HA

GF  
R30-IKZ-HB

GF162811.9661  
GF162721.9662  
GF162721.9663

GF162211.9661  
GF162121.9662  
GF162121.9663

TICN



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-3.1 M 1.1-2.1 K 1.1-4.2  
N 1.1-2.7 N 3.1-5.3 S 1.1-1.2, 2.1

Nenngröße

Nom. size  
ø d<sub>1</sub> 1)

P  
Gg/1" (tpi)

ø d<sub>F</sub>  
mm

ø d<sub>2</sub>

l<sub>1</sub>

l<sub>2</sub>

l<sub>4</sub>

Z  
(Flutes)

|           |    |    |      |    |    |      |    |   |
|-----------|----|----|------|----|----|------|----|---|
| <b>Pg</b> | 7  | 20 | 9,9  | 10 | 70 | 17,1 | 40 | 4 |
|           | 9  | 18 | 11,9 | 12 | 80 | 20,5 | 45 | 4 |
|           | 21 | 16 | 11,9 | 12 | 80 | 21,4 | 45 | 4 |

GF  
R30-IKZ-HA  
TICN

GF  
R30-IKZ-HB  
TICN

GF162816.9661  
GF162726.9662  
GF162726.9663

GF162216.9661  
GF162126.9662  
GF162126.9663

<sup>1)</sup> Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde  
Diameter related to internal pipe thread resp. external pipe thread

Weitere Ausführungen auf Anfrage  
Further designs upon request

Product  
Finder

v<sub>c</sub> / f<sub>z</sub>

M

MF

UNC  
UN, UNS

UNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



| Product Finder         |
|------------------------|
| $V_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |



GF-Vario-Z

Seite · Page

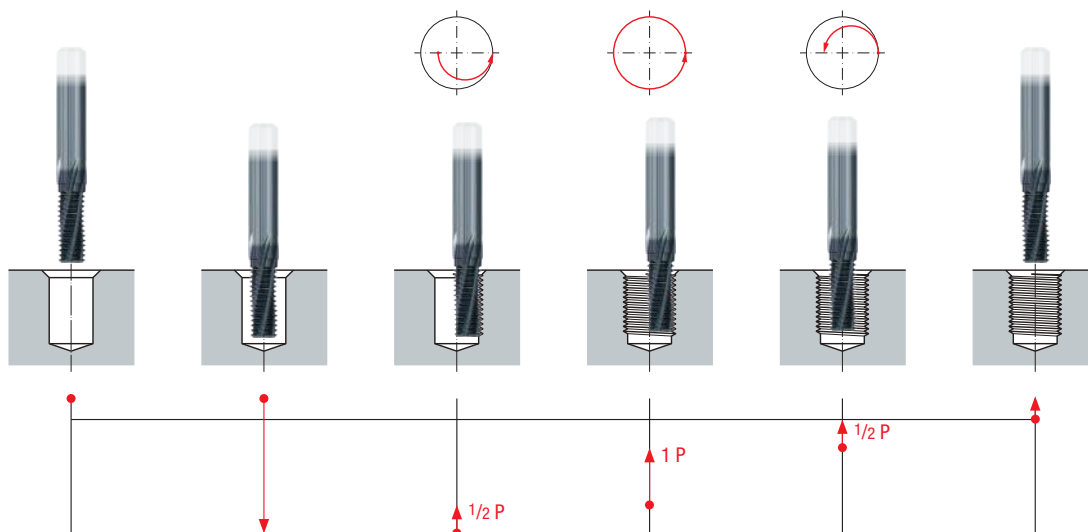
|            |     |
|------------|-----|
| <b>M</b>   | 444 |
| <b>MF</b>  | 444 |
| <b>UNC</b> | 445 |
| <b>UNF</b> | 445 |
| <b>UN</b>  | 445 |

Mögliche Modifikationen siehe Seite 356 - 357

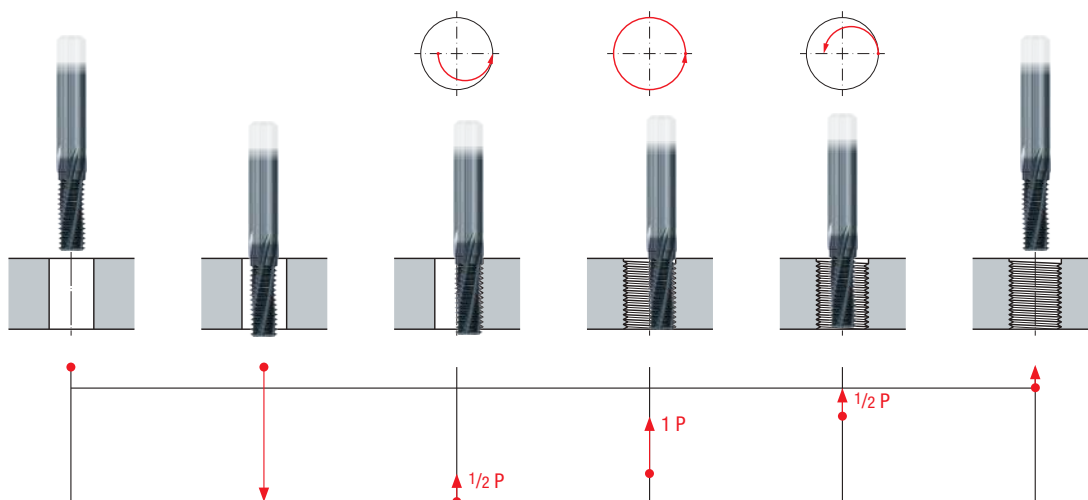
Possible modifications, see pages 356 - 357

|              |
|--------------|
| BGF          |
| ZBGF         |
| GSF          |
| GF           |
| <b>GF-VZ</b> |
| GF-KEG       |
| ZGF          |
| ZIRK-GF      |
| Gigant       |
| MoSys        |

### Gewindefräszyklus · Thread milling cycle



### Gewindefräszyklus mit Entfernen des unvollständigen Ganges · Thread milling cycle with removal of incomplete thread



GF-Vario-Z-AZR1



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446

447

447

447

Product  
Finder

$v_c / f_z$

M

MF

UNC  
UN, UNS

UNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

M  
MJ  
UNJC, UNJF

MF  
EG (STI)

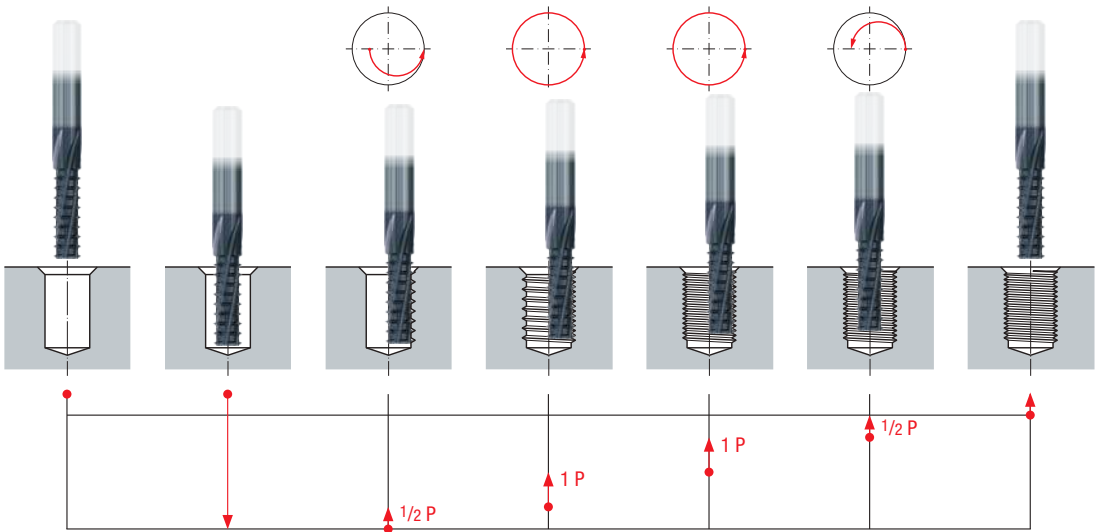
UNC  
SELF-LOCK

UNF  
UN

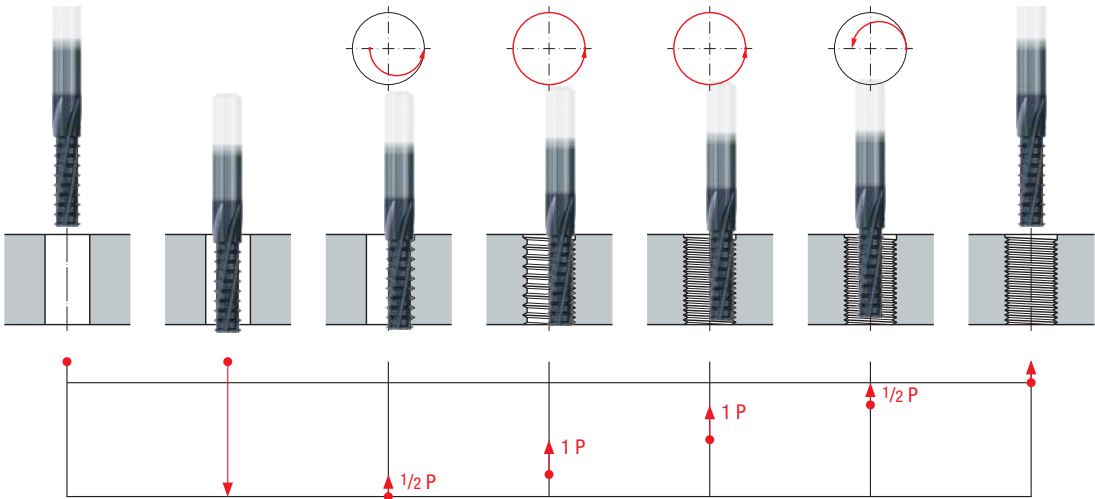
Tr

Zubehör  
Accessories

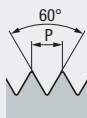
Gewindefräszyklus · Thread milling cycle



Gewindefräszyklus mit Entfernen des unvollständigen Ganges · Thread milling cycle with removal of incomplete thread

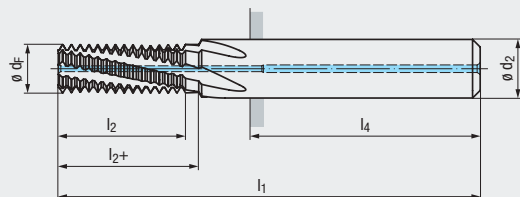


# M, MF



Für Innengewinde  
For internal threads

**Mit Option zum Entfernen des unvollständigen Ganges**  
With option to remove the incomplete thread



**VHM**  
**Carbide**

TIALN  
86

R15

**RH + LH**

Z4 - Z7



DIN 6535

 HA  
HE

Unvollständigen  
Gang entfernen  
Removal of  
incomplete thread



## GF-Vario-Z



**Mit höherer Nutenzahl**  
With increased number of flutes

new



new



new



Einsatzgebiete – Material  
Applications – material

358

|          |                |          |                |          |                |
|----------|----------------|----------|----------------|----------|----------------|
| <b>P</b> | <b>1.1-5.1</b> | <b>M</b> | <b>1.1-4.1</b> | <b>K</b> | <b>1.1-4.2</b> |
| <b>N</b> | <b>1.1-5.3</b> | <b>S</b> | <b>1.1-2.6</b> | <b>H</b> | <b>1.1-1.2</b> |

**N** 1.1-5.3

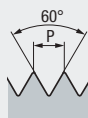
|   |         |
|---|---------|
| K | 1.1-4.2 |
| H | 1.1-1.2 |

Gewindetiefe  
Thread depth

**2 x d<sub>1</sub>**

| mit Option<br>with option |                        |                        |                  |                |                |                  |                | GF-Vario-Z<br>2xd <sub>1</sub><br>R15-HA<br>TIALN-86 | GF-Vario-Z<br>2xd <sub>1</sub><br>R15-IKZ-HA<br>TIALN-86 | GF-Vario-Z<br>2xd <sub>1</sub><br>R15-IKZ-HB<br>TIALN-86 |
|---------------------------|------------------------|------------------------|------------------|----------------|----------------|------------------|----------------|------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|
| P<br>mm                   | ø d <sub>1</sub><br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>2</sub> + | l <sub>4</sub> | Z<br>(Flutes)                                        |                                                          |                                                          |
| 0,5                       | ≥ M 3                  | 2,4                    | 6                | 51             | 6,3            | 7                | 36             | 4                                                    | GFB3572C.0030                                            |                                                          |
| 0,7                       | ≥ M 4                  | 3,15                   | 6                | 55             | 8,7            | 9,8              | 36             | 4                                                    |                                                          | GFB3512C.0040                                            |
| 0,8                       | ≥ M 5                  | 4                      | 6                | 55             | 10,8           | 12               | 36             | 4                                                    |                                                          | GFB3512C.0050                                            |
| 1                         | ≥ M 6                  | 4,8                    | 6                | 58             | 12,5           | 14               | 36             | 4                                                    |                                                          | GFB3512C.0060                                            |
| 1,25                      | ≥ M 8                  | 6,5                    | 8                | 62             | 16,9           | 18,7             | 36             | 4                                                    |                                                          | GFB3512C.0080                                            |
| 1,5                       | ≥ M10                  | 8,2                    | 10               | 72             | 21,7           | 24               | 40             | 5                                                    |                                                          | GFB3512C.0100                                            |
| 1,75                      | ≥ M12                  | 9,9                    | 10               | 78             | 25,3           | 28               | 40             | 5                                                    |                                                          | GFB3512C.0112                                            |
| 2                         | ≥ M14                  | 11,6                   | 12               | 88             | 29             | 32               | 45             | 5                                                    |                                                          | GFB3512C.0114                                            |
| 2                         | ≥ M16                  | 13,6                   | 14               | 95             | 33             | 36               | 45             | 5                                                    |                                                          | GFB3512C.0116                                            |
| 2,5                       | ≥ M18                  | 15                     | 16               | 103            | 38,7           | 42,4             | 48             | 5                                                    |                                                          | GFB3512C.0118                                            |
| 2,5                       | ≥ M20                  | 17                     | 18               | 108            | 41,2           | 44,9             | 48             | 6                                                    |                                                          | GFB3512C.0120                                            |
| 3                         | ≥ M24                  | 19,9                   | 20               | 120            | 49,4           | 53,9             | 50             | 6                                                    |                                                          | GFB3512C.0124                                            |

## MF



mit Option  
with option

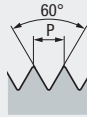
| mit Option<br>with option |                        |                        |                  |                |                |                  |                |               | GF-Vario-Z<br>2xd <sub>1</sub><br>R15-IKZ-HA<br>TIALN-86 | GF-Vario-Z<br>2xd <sub>1</sub><br>R15-IKZ-HB<br>TIALN-86 |
|---------------------------|------------------------|------------------------|------------------|----------------|----------------|------------------|----------------|---------------|----------------------------------------------------------|----------------------------------------------------------|
| P<br>mm                   | ø d <sub>1</sub><br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>2</sub> + | l <sub>4</sub> | Z<br>(Flutes) |                                                          |                                                          |
| 1                         | ≥ M 8                  | 6,7                    | 8                | 62             | 16,5           | 18               | 36             | 4             |                                                          | GF3572C.0251                                             |
| 1                         | ≥ M10                  | 8,7                    | 10               | 72             | 20,5           | 22               | 40             | 5             |                                                          | GF3572C.0276                                             |
| 1                         | ≥ M12                  | 10,6                   | 12               | 82             | 24,5           | 26               | 45             | 7             |                                                          | GF3572C.0301                                             |
| 1,25                      | ≥ M10                  | 8,4                    | 10               | 74             | 20,6           | 22,5             | 40             | 6             |                                                          | GF3572C.0277                                             |
| 1,25                      | ≥ M12                  | 10,4                   | 12               | 82             | 24,4           | 26,2             | 45             | 6             |                                                          | GF3572C.0302                                             |
| 1,5                       | ≥ M12                  | 10,1                   | 12               | 82             | 24,7           | 27               | 45             | 5             |                                                          | GF3572C.0303                                             |
| 1,5                       | ≥ M14                  | 12,1                   | 14               | 90             | 29,2           | 31,5             | 45             | 6             |                                                          | GF3572C.0331                                             |
| 1,5                       | > M16                  | 14,1                   | 16               | 100            | 33,7           | 36               | 48             | 5             |                                                          | GF3572C.0359                                             |

Weitere Ausführungen auf Anfrage  
Further designs upon request



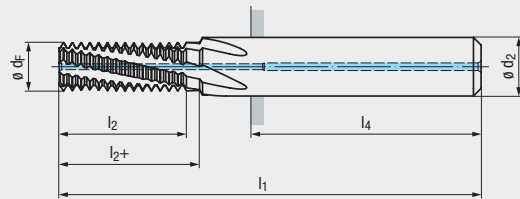
# UNC, UNF, UN

ASME B1.1



Für Innengewinde  
For internal threads

Mit Option zum Entfernen des unvollständigen Ganges  
With option to remove the incomplete thread

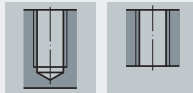
VHM  
CarbideTIALN  
86

R15

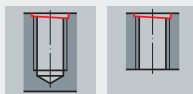
RH + LH

Z4 - Z8

DIN 6535



Unvollständigen  
Gang entfernen  
Removal of  
incomplete thread



GF-Vario-Z



Mit höherer Nutenzahl  
With increased number of flutes

new



new



Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

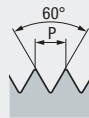
P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

2 x d<sub>1</sub>mit Option  
with option

| P<br>Gg/1" (tpi) | ø d <sub>1</sub><br>inch | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>2+</sub> | l <sub>4</sub> | Z<br>(Flutes) | GF-Vario-Z<br>2xd <sub>1</sub><br>R15-IKZ-HA<br>TIALN-86 | GF-Vario-Z<br>2xd <sub>1</sub><br>R15-IKZ-HB<br>TIALN-86 |
|------------------|--------------------------|------------------------|------------------|----------------|----------------|-----------------|----------------|---------------|----------------------------------------------------------|----------------------------------------------------------|
| 24               | ≥ Nr.10                  | 3,7                    | 6                | 55             | 10             | 11,6            | 36             | 4             | GFB3572C.5007                                            | GFB3512C.5007                                            |
| 20               | ≥ 1/4                    | 4,85                   | 6                | 58             | 13,3           | 15,2            | 36             | 4             | GFB3572C.5009                                            | GFB3512C.5009                                            |
| 18               | ≥ 5/16                   | 6,3                    | 8                | 62             | 16,2           | 18,3            | 36             | 4             | GFB3572C.5010                                            | GFB3512C.5010                                            |
| 16               | ≥ 3/8                    | 7,65                   | 8                | 65             | 19,8           | 22,2            | 36             | 5             | GFB3572C.5011                                            | GFB3512C.5011                                            |
| 14               | ≥ 7/16                   | 9                      | 10               | 74             | 22,6           | 25,4            | 40             | 5             | GFB3572C.5012                                            | GFB3512C.5012                                            |
| 13               | ≥ 1/2                    | 10,4                   | 12               | 85             | 26,3           | 29,3            | 45             | 5             | GFB3572C.5013                                            | GFB3512C.5013                                            |
| 12               | ≥ 9/16                   | 11,8                   | 12               | 88             | 30,6           | 33,8            | 45             | 5             | GFB3572C.5014                                            | GFB3512C.5014                                            |
| 11               | ≥ 5/8                    | 13                     | 14               | 94             | 33,4           | 36,9            | 45             | 5             | GFB3572C.5015                                            | GFB3512C.5015                                            |
| 10               | ≥ 3/4                    | 15,9                   | 16               | 105            | 39,3           | 43,1            | 48             | 5             | GFB3572C.5016                                            | GFB3512C.5016                                            |

# UNF, UN

ASME B1.1

mit Option  
with option

| P<br>Gg/1" (tpi) | ø d <sub>1</sub><br>inch | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>2+</sub> | l <sub>4</sub> | Z<br>(Flutes) | GF-Vario-Z<br>2xd <sub>1</sub><br>R15-IKZ-HA<br>TIALN-86 | GF-Vario-Z<br>2xd <sub>1</sub><br>R15-IKZ-HB<br>TIALN-86 |
|------------------|--------------------------|------------------------|------------------|----------------|----------------|-----------------|----------------|---------------|----------------------------------------------------------|----------------------------------------------------------|
| 32               | ≥ Nr.10                  | 3,9                    | 6                | 55             | 9,9            | 11,1            | 36             | 4             | GFB3572C.5041                                            | GFB3512C.5041                                            |
| 28               | ≥ Nr.12                  | 4,45                   | 6                | 56             | 11,3           | 12,7            | 36             | 4             | GFB3572C.5042                                            | GFB3512C.5042                                            |
| 28               | ≥ 1/4                    | 5,25                   | 6                | 58             | 13,1           | 14,5            | 36             | 4             | GFB3572C.5043                                            | GFB3512C.5043                                            |
| 24               | ≥ 5/16                   | 6,6                    | 8                | 62             | 16,4           | 18              | 36             | 5             | GFB3572C.5044                                            | GFB3512C.5044                                            |
| 24               | ≥ 3/8                    | 8,2                    | 10               | 71             | 19,6           | 21,1            | 40             | 6             | GFB3572C.5045                                            | GFB3512C.5045                                            |
| 20               | ≥ 7/16                   | 9,55                   | 10               | 74             | 22,2           | 24,1            | 40             | 6             | GFB3572C.5046                                            | GFB3512C.5046                                            |
| 20               | ≥ 1/4                    | 11,1                   | 12               | 84             | 26             | 27,9            | 45             | 7             | GFB3572C.5047                                            | GFB3512C.5047                                            |
| 18               | ≥ 9/16                   | 12,5                   | 14               | 90             | 28,9           | 31              | 45             | 7             | GFB3572C.5048                                            | GFB3512C.5048                                            |
| 18               | ≥ 5/8                    | 13,9                   | 14               | 95             | 33,1           | 35,2            | 45             | 8             | GFB3572C.5049                                            | GFB3512C.5049                                            |
| 16               | ≥ 3/4                    | 17                     | 18               | 105            | 38,9           | 41,3            | 48             | 8             | GFB3572C.5050                                            | GFB3512C.5050                                            |

Weitere Ausführungen auf Anfrage  
Further designs upon request

Product  
Finderv<sub>c</sub> / f<sub>z</sub>

M

MF

UNC

UN, UNS

UNF

UNEF

G, Rp

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör

Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

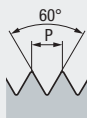
MoSys



- Product Finder
- $v_c / f_z$
- M
- MF
- UNC  
UN, UNS
- UNF  
UNEF
- G, Rp
- NPT, NPTF  
Rc, W
- BSW, BSF
- Pg
- MJ  
UNJC, UNJF
- EG (STI)
- SELF-LOCK
- Tr
- Zubehör  
Accessories

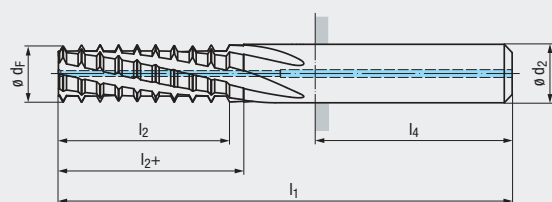
# M, MF

DIN 13



Für Innengewinde  
For internal threads

Mit Option zum Entfernen des unvollständigen Ganges  
With option to remove the incomplete thread



VHM  
Carbide

TIALN  
86

R15

RH + LH

Z4 - Z7



DIN 6535



Unvollständigen  
Gang entfernen  
Removal of  
incomplete thread



GF-Vario-Z-AZR1



Mit höherer Nutenzahl  
With increased number of flutes

new



new



Einsatzgebiete – Material  
Applications – material

» 358

|   |         |   |         |   |         |
|---|---------|---|---------|---|---------|
| P | 1.1-5.1 | M | 1.1-4.1 | K | 1.1-4.2 |
| N | 1.1-5.3 | S | 1.1-2.6 | H | 1.1-1.2 |

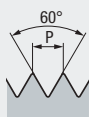
Gewindetiefe  
Thread depth

2,5 x d<sub>1</sub>

| mit Option<br>with option |                        |                        |                  |                |                |                  |                |               | GF-Vario-Z<br>2,5xd <sub>1</sub><br>AZR1-R15-IKZ-HA<br>TIALN-86 | GF-Vario-Z<br>2,5xd <sub>1</sub><br>AZR1-R15-IKZ-HB<br>TIALN-86 |
|---------------------------|------------------------|------------------------|------------------|----------------|----------------|------------------|----------------|---------------|-----------------------------------------------------------------|-----------------------------------------------------------------|
| P<br>mm                   | ø d <sub>1</sub><br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>2</sub> + | l <sub>4</sub> | Z<br>(Flutes) |                                                                 |                                                                 |
| 0,7                       | ≥ M 4                  | 3,15                   | 6                | 55             | 10,1           | 11,2             | 36             | 4             | GFB4573C.0040                                                   | GFB4513C.0040                                                   |
| 0,8                       | ≥ M 5                  | 4                      | 6                | 58             | 13,2           | 14,4             | 36             | 4             | GFB4573C.0050                                                   | GFB4513C.0050                                                   |
| 1                         | ≥ M 6                  | 4,8                    | 6                | 61             | 15,5           | 17               | 36             | 4             | GFB4573C.0060                                                   | GFB4513C.0060                                                   |
| 1,25                      | ≥ M 8                  | 6,5                    | 8                | 68             | 20,6           | 22,5             | 36             | 4             | GFB4573C.0080                                                   | GFB4513C.0080                                                   |
| 1,5                       | ≥ M10                  | 8,2                    | 10               | 78             | 26,2           | 28,5             | 40             | 5             | GFB4573C.0100                                                   | GFB4513C.0100                                                   |
| 1,75                      | ≥ M12                  | 9,9                    | 10               | 84             | 30,6           | 33,2             | 40             | 5             | GFB4573C.0112                                                   | GFB4513C.0112                                                   |
| 2                         | ≥ M14                  | 11,6                   | 12               | 98             | 37             | 40               | 45             | 5             | GFB4573C.0114                                                   | GFB4513C.0114                                                   |
| 2                         | ≥ M16                  | 13,6                   | 14               | 102            | 41             | 44               | 45             | 5             | GFB4573C.0116                                                   | GFB4513C.0116                                                   |
| 2,5                       | ≥ M18                  | 15                     | 16               | 115            | 46,2           | 49,9             | 48             | 5             | GFB4573C.0118                                                   | GFB4513C.0118                                                   |
| 2,5                       | ≥ M20                  | 17                     | 18               | 120            | 51,2           | 54,9             | 48             | 6             | GFB4573C.0120                                                   | GFB4513C.0120                                                   |
| 3                         | ≥ M24                  | 19,9                   | 20               | 135            | 61,4           | 65,9             | 50             | 6             | GFB4573C.0124                                                   | GFB4513C.0124                                                   |

# MF

DIN 13



new



new

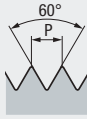


| mit Option<br>with option |                        |                        |                  |                |                |                  |                |               | GF-Vario-Z<br>2,5xd <sub>1</sub><br>AZR1-R15-IKZ-HA<br>TIALN-86 | GF-Vario-Z<br>2,5xd <sub>1</sub><br>AZR1-R15-IKZ-HB<br>TIALN-86 |
|---------------------------|------------------------|------------------------|------------------|----------------|----------------|------------------|----------------|---------------|-----------------------------------------------------------------|-----------------------------------------------------------------|
| P<br>mm                   | ø d <sub>1</sub><br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>2</sub> + | l <sub>4</sub> | Z<br>(Flutes) |                                                                 |                                                                 |
| 1                         | ≥ M 8                  | 6,7                    | 8                | 68             | 20,5           | 22               | 36             | 4             | GFB4573C.0251                                                   | GFB4513C.0251                                                   |
| 1                         | ≥ M10                  | 8,7                    | 10               | 78             | 25,5           | 27               | 40             | 5             | GFB4573C.0276                                                   | GFB4513C.0276                                                   |
| 1                         | ≥ M12                  | 10,6                   | 12               | 88             | 30,5           | 32               | 45             | 7             | GFB4573C.0301                                                   | GFB4513C.0301                                                   |
| 1,25                      | ≥ M10                  | 8,4                    | 10               | 78             | 25,6           | 27,5             | 40             | 6             | GFB4573C.0277                                                   | GFB4513C.0277                                                   |
| 1,25                      | ≥ M12                  | 10,4                   | 12               | 88             | 30,6           | 32,5             | 45             | 6             | GFB4573C.0302                                                   | GFB4513C.0302                                                   |
| 1,5                       | ≥ M12                  | 10,1                   | 12               | 88             | 30,7           | 33               | 45             | 5             | GFB4573C.0303                                                   | GFB4513C.0303                                                   |
| 1,5                       | ≥ M14                  | 12,1                   | 14               | 95             | 35,2           | 37,5             | 45             | 6             | GFB4573C.0331                                                   | GFB4513C.0331                                                   |
| 1,5                       | ≥ M16                  | 14,1                   | 16               | 110            | 41,2           | 43,5             | 48             | 5             | GFB4573C.0359                                                   | GFB4513C.0359                                                   |

Weitere Ausführungen auf Anfrage  
Further designs upon request

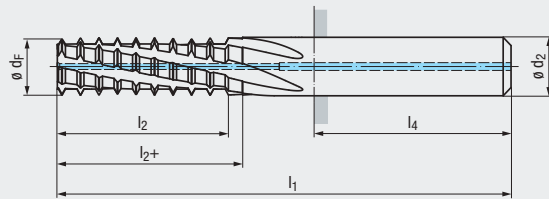
## UNC, UNF, UN

ASME B1.1



Für Innengewinde  
For internal threads

Mit Option zum Entfernen des unvollständigen Ganges  
With option to remove the incomplete thread

VHM  
CarbideTIALN  
86

R15

RH + LH

Z4 - Z8

DIN 6535



Unvollständigen  
Gang entfernen  
Removal of  
incomplete thread



GF-Vario-Z-AZR1



Mit höherer Nutenzahl  
With increased number of flutes

new



new



Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

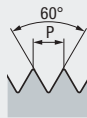
P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

2,5 x d<sub>1</sub>mit Option  
with option

| P<br>Gg/1" (tpi) | ø d <sub>1</sub><br>inch | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>2+</sub> | l <sub>4</sub> | Z<br>(Flutes) | GF-Vario-Z<br>2,5xd <sub>1</sub><br>AZR1-R15-IKZ-HA<br>TIALN-86 | GF-Vario-Z<br>2,5xd <sub>1</sub><br>AZR1-R15-IKZ-HB<br>TIALN-86 |
|------------------|--------------------------|------------------------|------------------|----------------|----------------|-----------------|----------------|---------------|-----------------------------------------------------------------|-----------------------------------------------------------------|
| 24               | ≥ Nr.10                  | 3,7                    | 6                | 58             | 12,2           | 13,7            | 36             | 4             | GFB4573C.5007                                                   | GFB4513C.5007                                                   |
| 20               | ≥ 1/4                    | 4,85                   | 6                | 64             | 17,1           | 19              | 36             | 4             | GFB4573C.5009                                                   | GFB4513C.5009                                                   |
| 18               | ≥ 5/16                   | 6,3                    | 8                | 68             | 20,4           | 22,5            | 36             | 4             | GFB4573C.5010                                                   | GFB4513C.5010                                                   |
| 16               | ≥ 3/8                    | 7,65                   | 8                | 72             | 24,6           | 27              | 36             | 5             | GFB4573C.5011                                                   | GFB4513C.5011                                                   |
| 14               | ≥ 7/16                   | 9                      | 10               | 82             | 28,1           | 30,8            | 40             | 5             | GFB4573C.5012                                                   | GFB4513C.5012                                                   |
| 13               | ≥ 1/2                    | 10,4                   | 12               | 93             | 32,2           | 35,1            | 45             | 5             | GFB4573C.5013                                                   | GFB4513C.5013                                                   |
| 12               | ≥ 9/16                   | 11,8                   | 12               | 98             | 37             | 40,2            | 45             | 5             | GFB4573C.5014                                                   | GFB4513C.5014                                                   |
| 11               | ≥ 5/8                    | 13                     | 14               | 102            | 40,3           | 43,8            | 45             | 5             | GFB4573C.5015                                                   | GFB4513C.5015                                                   |
| 10               | ≥ 3/4                    | 15,9                   | 16               | 117            | 49,5           | 53,3            | 48             | 5             | GFB4573C.5016                                                   | GFB4513C.5016                                                   |

## UNF, UN

ASME B1.1



new



new

mit Option  
with option

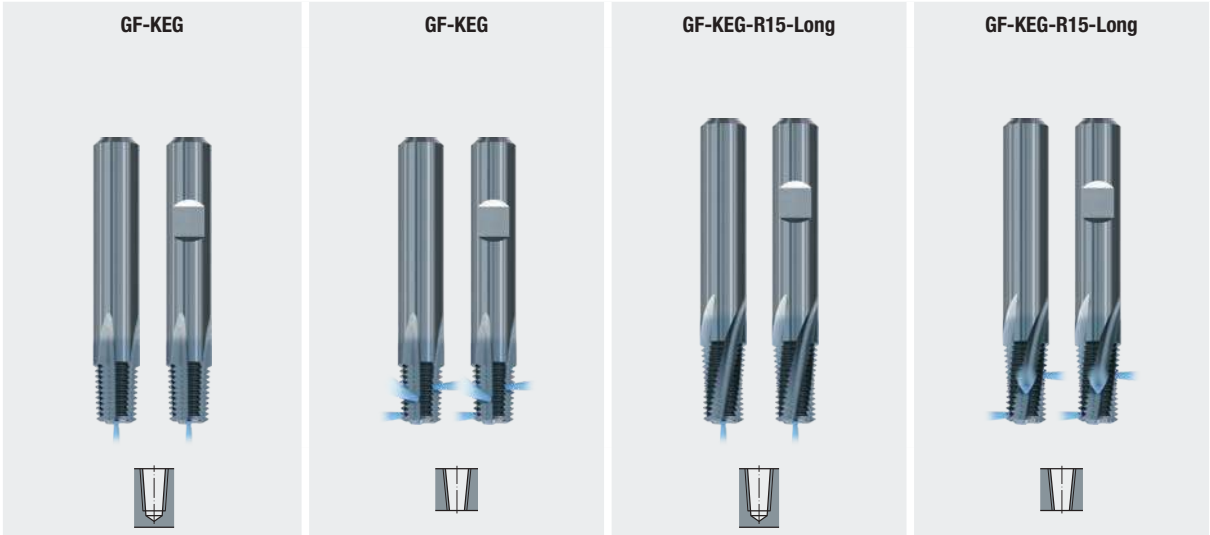
| P<br>Gg/1" (tpi) | ø d <sub>1</sub><br>inch | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>2+</sub> | l <sub>4</sub> | Z<br>(Flutes) | GF-Vario-Z<br>2,5xd <sub>1</sub><br>AZR1-R15-IKZ-HA<br>TIALN-86 | GF-Vario-Z<br>2,5xd <sub>1</sub><br>AZR1-R15-IKZ-HB<br>TIALN-86 |
|------------------|--------------------------|------------------------|------------------|----------------|----------------|-----------------|----------------|---------------|-----------------------------------------------------------------|-----------------------------------------------------------------|
| 32               | ≥ Nr.10                  | 3,9                    | 6                | 58             | 12,3           | 13,5            | 36             | 4             | GFB4573C.5041                                                   | GFB4513C.5041                                                   |
| 28               | ≥ Nr.12                  | 4,45                   | 6                | 60             | 14             | 15,4            | 36             | 4             | GFB4573C.5042                                                   | GFB4513C.5042                                                   |
| 28               | ≥ 1/4                    | 5,25                   | 6                | 64             | 16,8           | 18,1            | 36             | 4             | GFB4573C.5043                                                   | GFB4513C.5043                                                   |
| 24               | ≥ 5/16                   | 6,6                    | 8                | 68             | 20,6           | 22,2            | 36             | 5             | GFB4573C.5044                                                   | GFB4513C.5044                                                   |
| 20               | ≥ 7/16                   | 9,55                   | 10               | 82             | 28,6           | 30,5            | 40             | 6             | GFB4573C.5046                                                   | GFB4513C.5046                                                   |
| 18               | ≥ 9/16                   | 12,5                   | 14               | 98             | 36             | 38,1            | 45             | 7             | GFB4573C.5048                                                   | GFB4513C.5048                                                   |
| 18               | ≥ 5/8                    | 13,9                   | 14               | 102            | 40,2           | 42,3            | 45             | 8             | GFB4573C.5049                                                   | GFB4513C.5049                                                   |
| 16               | ≥ 3/4                    | 17                     | 18               | 115            | 48,4           | 50,8            | 48             | 8             | GFB4573C.5050                                                   | GFB4513C.5050                                                   |

Weitere Ausführungen auf Anfrage  
Further designs upon request

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

|              |
|--------------|
| BGF          |
| ZBGF         |
| GSF          |
| GF           |
| <b>GF-VZ</b> |
| GF-KEG       |
| ZGF          |
| ZIRK-GF      |
| Gigant       |
| MoSys        |





Seite · Page

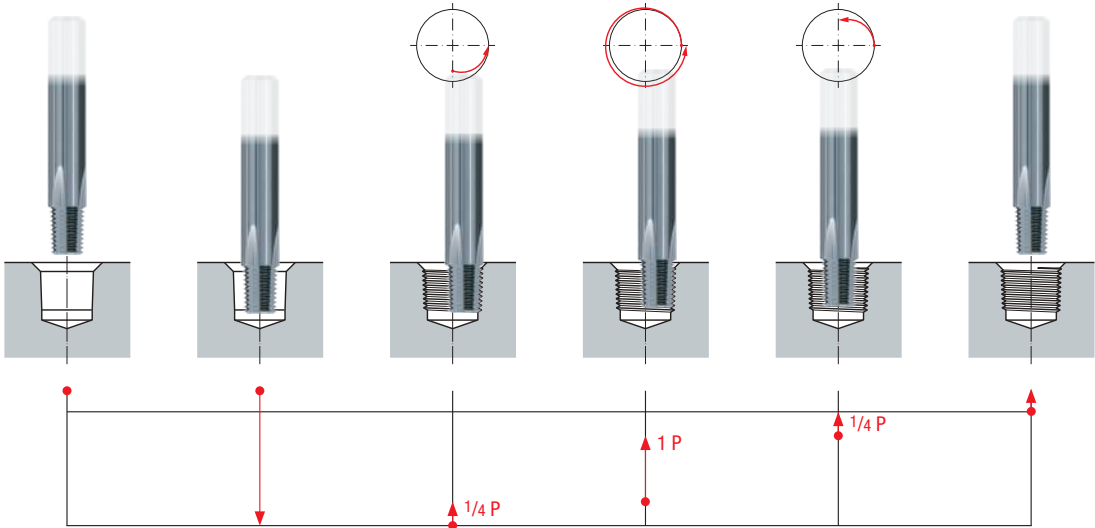
|     |     |     |     |                     |
|-----|-----|-----|-----|---------------------|
| 451 | 452 |     |     | <b>NPT</b>          |
|     |     | 453 | 454 | <b>NPT (API-LP)</b> |
| 456 | 457 | 458 | 459 | <b>NPTF</b>         |
| 461 | 462 |     |     | <b>Rc (BSPT)</b>    |

Mögliche Modifikationen siehe Seite 356 - 357  
Possible modifications, see pages 356 - 357

| Product Finder         |
|------------------------|
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

|               |
|---------------|
| BGF           |
| ZBGF          |
| GSF           |
| GF            |
| GF-VZ         |
| <b>GF-KEG</b> |
| ZGF           |
| ZIRK-GF       |
| Gigant        |
| MoSys         |

Gewindefräszyklus · Thread milling cycle



Product  
Finder

$v_c / f_z$

M

MF

UNC  
UN, UNS

UNF  
UNEF

G, Rp

**NPT, NPTF**  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

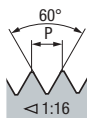
Gigant

MoSys

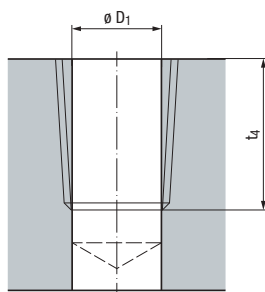


# NPT

ANSI/ASME B1.20.1



a) Zylindrisch vorarbeiten  
Cylindrical preparation of thread hole

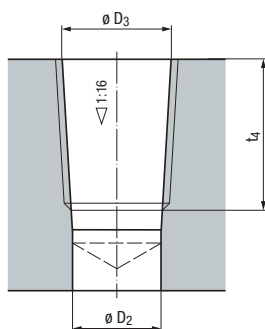


EMUGE NPT-Gewindefräser sind für die Lochformen a) und b) geeignet.

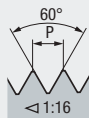
EMUGE NPT thread milling cutters are suited for the hole forms a) and b).

| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing D_1$ | $t_4$ |
|---------------------------------------------|------------------|-------------------|-------|
| 1/16                                        | 27               | 6,15              | 8,30  |
| 1/8                                         | 27               | 8,50              | 8,30  |
| 1/4                                         | 18               | 11,00             | 12,15 |
| 3/8                                         | 18               | 14,40             | 12,45 |
| 1/2                                         | 14               | 17,80             | 16,30 |
| 3/4                                         | 14               | 23,15             | 16,30 |
| 1"                                          | 11 1/2           | 29,05             | 19,55 |
| 1 1/4                                       | 11 1/2           | 37,80             | 20,05 |
| 1 1/2                                       | 11 1/2           | 43,85             | 20,05 |
| 2"                                          | 11 1/2           | 55,85             | 20,45 |

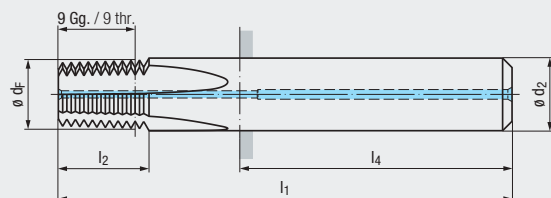
b) Kegelig vorarbeiten  
Tapered preparation of thread hole



| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing D_2$ | $\varnothing D_3$<br>+0,05 | $t_4$ |
|---------------------------------------------|------------------|-------------------|----------------------------|-------|
| 1/16                                        | 27               | 5,95              | 6,39                       | 8,30  |
| 1/8                                         | 27               | 8,30              | 8,74                       | 8,30  |
| 1/4                                         | 18               | 10,75             | 11,36                      | 12,15 |
| 3/8                                         | 18               | 14,15             | 14,80                      | 12,45 |
| 1/2                                         | 14               | 17,45             | 18,32                      | 16,30 |
| 3/4                                         | 14               | 22,80             | 23,67                      | 16,30 |
| 1"                                          | 11 1/2           | 28,65             | 29,69                      | 19,55 |
| 1 1/4                                       | 11 1/2           | 37,35             | 38,45                      | 20,05 |
| 1 1/2                                       | 11 1/2           | 43,45             | 44,52                      | 20,05 |
| 2"                                          | 11 1/2           | 55,45             | 56,56                      | 20,45 |

**NPT**

ANSI/ASME B1.20.1

Für kegeliges Innengewinde  
For internal tapered threads**VHM**  
Carbide**RH + LH****Z3 - Z5****DIN 6535****GF-KEG**Einsatzgebiete – Material  
Applications – material

» 358

Nenngröße  
Nom. size

P

Gg/1" (tpi)

 $\varnothing d_F$ 

mm

 $\varnothing d_2$  $l_1$  $l_2$  $l_4$ Z  
(Flutes)

|                  |                  |                           |
|------------------|------------------|---------------------------|
| <b>P</b> 1.1-5.1 | <b>K</b> 1.1-4.2 | <b>N</b> 1.1-1.5, 2.1-2.6 |
| <b>N</b> 3.1-4.2 | <b>N</b> 5.1-5.2 | <b>S</b> 1.1-1.3          |

**GF-KEG**  
**IKZ-HA****GF-KEG**  
**IKZ-HB**

GF173701.5763  
GF173701.5764  
GF173711.5765  
GF173711.5766  
GF173731.9678  
GF173751.9679

GF173101.5763  
GF173101.5764  
GF173111.5765  
GF173111.5766  
GF173131.9678  
GF173151.9679

**TICN**Einsatzgebiete – Material  
Applications – material

» 358

Nenngröße  
Nom. size

P

Gg/1" (tpi)

 $\varnothing d_F$ 

mm

 $\varnothing d_2$  $l_1$  $l_2$  $l_4$ Z  
(Flutes)

|                  |                  |                  |
|------------------|------------------|------------------|
| <b>P</b> 1.1-5.1 | <b>M</b> 1.1-4.1 | <b>K</b> 1.1-4.2 |
| <b>N</b> 1.1-5.3 | <b>S</b> 1.1-2.6 | <b>H</b> 1.1-1.2 |

**GF-KEG**  
**IKZ-HA**  
**TICN****GF-KEG**  
**IKZ-HB**  
**TICN**

GF173706.5763  
GF173706.5764  
GF173716.5765  
GF173716.5766  
GF173736.9678  
GF173756.9679

GF173106.5763  
GF173106.5764  
GF173116.5765  
GF173116.5766  
GF173136.9678  
GF173156.9679

Weitere Ausführungen auf Anfrage  
Further designs upon request

**Anwendungshinweis:** Es wird ein NC-Programm für schneckenförmiges Wendelnutfräsen benötigt, da sonst ein Absatz im gefrästen Gewinde entsteht  
**Application recommendation:** You must have an NC programme for spiral-worm keyway milling, otherwise the finished thread will have a stepped profile

Gewindebohrer für kegelige  
Innengewinde siehe Seite 248 - 263Taps for internal tapered threads,  
see page 248 - 263

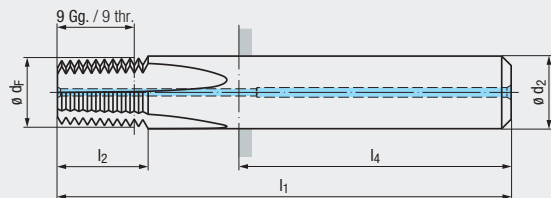


|                                                                                   |
|-----------------------------------------------------------------------------------|
| Product Finder                                                                    |
| $v_c / f_z$                                                                       |
| M                                                                                 |
| MF                                                                                |
| UNC<br>UN, UNS                                                                    |
| UNF<br>UNEF                                                                       |
| G, Rp                                                                             |
| NPT, NPTF<br>Rc, W                                                                |
| BSW, BSF                                                                          |
| Pg                                                                                |
| MJ<br>UNJC, UNJF                                                                  |
| EG (STI)                                                                          |
| SELF-LOCK                                                                         |
| Tr                                                                                |
| Zubehör<br>Accessories                                                            |
| BGF                                                                               |
| ZBGF                                                                              |
| GSF                                                                               |
| GF                                                                                |
| GF-VZ                                                                             |
| GF-KEG                                                                            |
| ZGF                                                                               |
| ZIRK-GF                                                                           |
| Gigant                                                                            |
| MoSys                                                                             |
|  |



ANSI/ASME B1.20.1

Für kegeliges Innengewinde  
For internal tapered threads



VHM  
Carbide

RH + LH

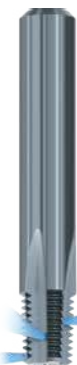
Z3 - Z5



DIN 6535



GF-KEG



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.3

Nenngröße

Nom. size

$\phi d_1$

P

Gg/1" (tpi)

$\phi d_F$

mm

$\phi d_2$

mm

$l_1$

mm

$l_2$

mm

$l_4$

mm

Z

(Flutes)

GF-KEG  
IKZN-HA

GF-KEG  
IKZN-HB

|           |        |       |    |    |      |    |   |               |               |
|-----------|--------|-------|----|----|------|----|---|---------------|---------------|
| 1/16      | 27     | 5,9   | 8  | 55 | 9,9  | 36 | 3 | GF193701.5763 | GF193101.5763 |
| 1/8       | 27     | 7,65  | 8  | 55 | 9,9  | 36 | 3 | GF193701.5764 | GF193101.5764 |
| 1/4       | 18     | 10,15 | 12 | 75 | 14,8 | 45 | 4 | GF193711.5765 | GF193111.5765 |
| 3/8       | 18     | 11,15 | 12 | 75 | 14,8 | 45 | 4 | GF193711.5766 | GF193111.5766 |
| 1/2 - 3/4 | 14     | 14,25 | 16 | 80 | 19   | 48 | 4 | GF193731.9678 | GF193131.9678 |
| 1" - 2"   | 11 1/2 | 19,6  | 20 | 90 | 23,1 | 50 | 5 | GF193751.9679 | GF193151.9679 |

TICN



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

Nenngröße

Nom. size

$\phi d_1$

P

Gg/1" (tpi)

$\phi d_F$

mm

$\phi d_2$

mm

$l_1$

mm

$l_2$

mm

$l_4$

mm

Z

(Flutes)

GF-KEG  
IKZN-HA  
TICN

GF-KEG  
IKZN-HB  
TICN

|           |        |       |    |    |      |    |   |               |               |
|-----------|--------|-------|----|----|------|----|---|---------------|---------------|
| 1/16      | 27     | 5,9   | 8  | 55 | 9,9  | 36 | 3 | GF193706.5763 | GF193106.5763 |
| 1/8       | 27     | 7,65  | 8  | 55 | 9,9  | 36 | 3 | GF193706.5764 | GF193106.5764 |
| 1/4       | 18     | 10,15 | 12 | 75 | 14,8 | 45 | 4 | GF193716.5765 | GF193116.5765 |
| 3/8       | 18     | 11,15 | 12 | 75 | 14,8 | 45 | 4 | GF193716.5766 | GF193116.5766 |
| 1/2 - 3/4 | 14     | 14,25 | 16 | 80 | 19   | 48 | 4 | GF193736.9678 | GF193136.9678 |
| 1" - 2"   | 11 1/2 | 19,6  | 20 | 90 | 23,1 | 50 | 5 | GF193756.9679 | GF193156.9679 |

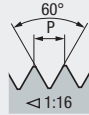
Weitere Ausführungen auf Anfrage  
Further designs upon request

**Anwendungshinweis:** Es wird ein NC-Programm für schneckenförmiges Wendelnutfräsen benötigt, da sonst ein Absatz im gefrästen Gewinde entsteht  
**Application recommendation:** You must have an NC programme for spiral-worm keyway milling, otherwise the finished thread will have a stepped profile

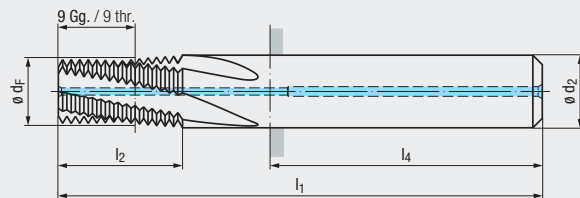


**NPT (API-LP)**

ANSI/ASME B1.20.1



Für kegeliges Innengewinde  
For internal tapered threads

**VHM  
Carbide****R15****RH + LH****Z3 - Z5****DIN 6535****GF-KEG-R15-Long**

Einsatzgebiete – Material  
Applications – material

» 358

**Nenngröße**

Nom. size

 $\varnothing d_1$ 

P

Gg/1" (tpi)

 $\varnothing d_F$ 

mm

 $\varnothing d_2$  $l_1$  $l_2$  $l_4$ 

Z

(Flutes)

|           |        |       |    |    |      |    |   |
|-----------|--------|-------|----|----|------|----|---|
| 1/16      | 27     | 5,9   | 8  | 60 | 13,6 | 36 | 3 |
| 1/8       | 27     | 7,65  | 8  | 60 | 13,6 | 36 | 3 |
| 1/4       | 18     | 10,15 | 12 | 80 | 20,4 | 45 | 4 |
| 3/8       | 18     | 11,15 | 12 | 80 | 20,4 | 45 | 4 |
| 1/2 - 3/4 | 14     | 14,25 | 16 | 85 | 26,3 | 48 | 4 |
| 1" - 2"   | 11 1/2 | 19,6  | 20 | 95 | 32   | 50 | 5 |

**P** 1.1-5.1 **K** 1.1-4.2 **N** 1.1-1.5, 2.1-2.6  
**N** 3.1-4.2 **N** 5.1-5.2 **S** 1.1-1.3

**GF-KEG  
R15-Long-IKZ-HA****GF-KEG  
R15-Long-IKZ-HB**

GF175901.5763  
 GF175901.5764  
 GF175911.5765  
 GF175911.5766  
 GF175931.9678  
 GF175951.9679

GF175301.5763  
 GF175301.5764  
 GF175311.5765  
 GF175311.5766  
 GF175331.9678  
 GF175351.9679

**TICN**

Einsatzgebiete – Material  
Applications – material

» 358

**Nenngröße**

Nom. size

 $\varnothing d_1$ 

P

Gg/1" (tpi)

 $\varnothing d_F$ 

mm

 $\varnothing d_2$  $l_1$  $l_2$  $l_4$ 

Z

(Flutes)

|           |        |       |    |    |      |    |   |
|-----------|--------|-------|----|----|------|----|---|
| 1/16      | 27     | 5,9   | 8  | 60 | 13,6 | 36 | 3 |
| 1/8       | 27     | 7,65  | 8  | 60 | 13,6 | 36 | 3 |
| 1/4       | 18     | 10,15 | 12 | 80 | 20,4 | 45 | 4 |
| 3/8       | 18     | 11,15 | 12 | 80 | 20,4 | 45 | 4 |
| 1/2 - 3/4 | 14     | 14,25 | 16 | 85 | 26,3 | 48 | 4 |
| 1" - 2"   | 11 1/2 | 19,6  | 20 | 95 | 32   | 50 | 5 |

**P** 1.1-5.1 **M** 1.1-4.1 **K** 1.1-4.2  
**N** 1.1-5.3 **S** 1.1-2.6 **H** 1.1-1.2

**GF-KEG  
R15-Long-ICZ-HA  
TICN****GF-KEG  
R15-Long-ICZ-HB  
TICN**

GF175906.5763  
 GF175906.5764  
 GF175916.5765  
 GF175916.5766  
 GF175936.9678  
 GF175956.9679

GF175306.5763  
 GF175306.5764  
 GF175316.5765  
 GF175316.5766  
 GF175336.9678  
 GF175356.9679

Weitere Ausführungen auf Anfrage  
Further designs upon request

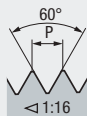
**Anwendungshinweis:** Es wird ein NC-Programm für schneckenförmiges Wendelnutfräsen benötigt, da sonst ein Absatz im gefrästen Gewinde entsteht  
**Application recommendation:** You must have an NC programme for spiral-worm keyway milling, otherwise the finished thread will have a stepped profile



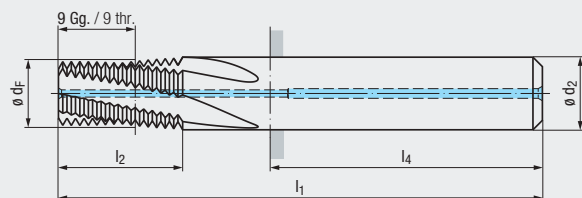
|                                                                                   |
|-----------------------------------------------------------------------------------|
| Product Finder                                                                    |
| $v_c / f_z$                                                                       |
| M                                                                                 |
| MF                                                                                |
| UNC<br>UN, UNS                                                                    |
| UNF<br>UNEF                                                                       |
| G, Rp                                                                             |
| NPT, NPTF<br>Rc, W                                                                |
| BSW, BSF                                                                          |
| Pg                                                                                |
| MJ<br>UNJC, UNJF                                                                  |
| EG (STI)                                                                          |
| SELF-LOCK                                                                         |
| Tr                                                                                |
| Zubehör<br>Accessories                                                            |
| BGF                                                                               |
| ZBGF                                                                              |
| GSF                                                                               |
| GF                                                                                |
| GF-VZ                                                                             |
| GF-KEG                                                                            |
| ZGF                                                                               |
| ZIRK-GF                                                                           |
| Gigant                                                                            |
| MoSys                                                                             |
|  |

# NPT (API-LP)

ANSI/ASME B1.20.1



Für kegeliges Innengewinde  
For internal tapered threads



VHM  
Carbide

R15

RH + LH

Z3 - Z5



DIN 6535



## GF-KEG-R15-Long



Einsatzgebiete – Material  
Applications – material

» 358

Nenngröße

Nom. size

Ø d<sub>1</sub>

P

Gg/1" (tpi)

Ø d<sub>F</sub>

mm

Ø d<sub>2</sub>

mm

l<sub>1</sub>

mm

l<sub>2</sub>

mm

l<sub>4</sub>

mm

Z

(Flutes)

1/16

27

5,9

8

60

13,6

36

3

1/8

27

7,65

8

60

13,6

36

3

1/4

18

10,15

12

80

20,4

45

4

3/8

18

11,15

12

80

20,4

45

4

1/2 - 3/4

14

14,25

16

85

26,3

48

4

1" - 2"

11 1/2

19,6

20

95

32

50

5

P 1.1-5.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.3

GF-KEG  
R15-Long-**IKZN-HA**

GF-KEG  
R15-Long-**IKZN-HB**

GF195901.5763

GF195301.5763

GF195901.5764

GF195301.5764

GF195911.5765

GF195311.5765

GF195911.5766

GF195311.5766

GF195931.9678

GF195331.9678

GF195951.9679

GF195351.9679

TICN



Einsatzgebiete – Material  
Applications – material

» 358

Nenngröße

Nom. size

Ø d<sub>1</sub>

P

Gg/1" (tpi)

Ø d<sub>F</sub>

mm

Ø d<sub>2</sub>

mm

l<sub>1</sub>

mm

l<sub>2</sub>

mm

l<sub>4</sub>

mm

Z

(Flutes)

1/16

27

5,9

8

60

13,6

36

3

1/8

27

7,65

8

60

13,6

36

3

1/4

18

10,15

12

80

20,4

45

4

3/8

18

11,15

12

80

20,4

45

4

1/2 - 3/4

14

14,25

16

85

26,3

48

4

1" - 2"

11 1/2

19,6

20

95

32

50

5

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

GF-KEG  
R15-Long-**IKZN-HA**  
TICN

GF-KEG  
R15-Long-**IKZN-HB**  
TICN

GF195906.5763

GF195306.5763

GF195906.5764

GF195306.5764

GF195916.5765

GF195316.5765

GF195916.5766

GF195316.5766

GF195936.9678

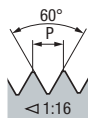
GF195336.9678

GF195956.9679

GF195356.9679

Weitere Ausführungen auf Anfrage  
Further designs upon request

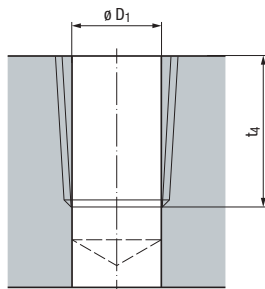
**Anwendungshinweis:** Es wird ein NC-Programm für schneckenförmiges Wendelnutfräsen benötigt, da sonst ein Absatz im gefrästen Gewinde entsteht  
**Application recommendation:** You must have an NC programme for spiral-worm keyway milling, otherwise the finished thread will have a stepped profile

**NPTF**

ANSI B1.20.3

## a) Zylindrisch vorarbeiten

Cylindrical preparation of thread hole



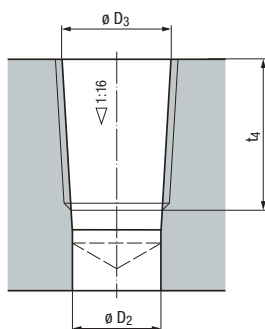
EMUGE NPTF-Gewindefräser sind für die Lochformen a) und b) geeignet.

EMUGE NPTF thread milling cutters are suited for the hole forms a) and b).

| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing D_1$ | $t_4$ |
|---------------------------------------------|------------------|-------------------|-------|
| 1/16                                        | 27               | 6,10              | 8,30  |
| 1/8                                         | 27               | 8,45              | 8,30  |
| 1/4                                         | 18               | 10,90             | 12,15 |
| 3/8                                         | 18               | 14,30             | 12,45 |
| 1/2                                         | 14               | 17,60             | 16,30 |
| 3/4                                         | 14               | 23,00             | 16,30 |
| 1"                                          | 11 1/2           | 28,75             | 19,55 |
| 1 1/4                                       | 11 1/2           | 37,50             | 20,05 |
| 1 1/2                                       | 11 1/2           | 43,75             | 20,05 |
| 2"                                          | 11 1/2           | 55,75             | 20,45 |

## b) Kegelig vorarbeiten

Tapered preparation of thread hole



| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing D_2$ | $\varnothing D_3$<br>+0,05 | $t_4$ |
|---------------------------------------------|------------------|-------------------|----------------------------|-------|
| 1/16                                        | 27               | 5,95              | 6,41                       | 8,30  |
| 1/8                                         | 27               | 8,30              | 8,76                       | 8,30  |
| 1/4                                         | 18               | 10,75             | 11,40                      | 12,15 |
| 3/8                                         | 18               | 14,15             | 14,84                      | 12,45 |
| 1/2                                         | 14               | 17,45             | 18,33                      | 16,30 |
| 3/4                                         | 14               | 22,80             | 23,68                      | 16,30 |
| 1"                                          | 11 1/2           | 28,65             | 29,72                      | 19,55 |
| 1 1/4                                       | 11 1/2           | 37,35             | 38,48                      | 20,05 |
| 1 1/2                                       | 11 1/2           | 43,45             | 44,55                      | 20,05 |
| 2"                                          | 11 1/2           | 55,45             | 56,59                      | 20,45 |

Product  
Finder $v_c / f_z$ 

M

MF

UNC  
UN, UNSUNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

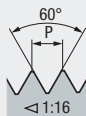
MoSys



|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |

# NPTF

ANSI B1.20.3



VHM  
Carbide

RH + LH

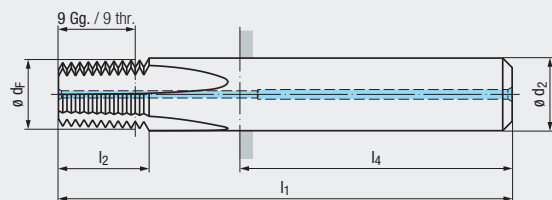
Z3 - Z5



DIN 6535



Für kegeliges Innengewinde  
For internal tapered threads



GF-KEG



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.3

Nenngröße  
Nom. size

P

Gg/1" (tpi)

Ø d<sub>F</sub>

mm

Ø d<sub>2</sub>

mm

l<sub>1</sub>

mm

l<sub>2</sub>

mm

l<sub>4</sub>

mm

Z

(Flutes)

GF-KEG  
IKZ-HA

GF-KEG  
IKZ-HB

|         |        |       |    |    |      |    |   |               |               |
|---------|--------|-------|----|----|------|----|---|---------------|---------------|
| 1/16    | 27     | 5,9   | 8  | 55 | 9,8  | 36 | 3 | GF173701.5782 | GF173101.5782 |
| 1/8     | 27     | 7,65  | 8  | 55 | 9,8  | 36 | 3 | GF173701.5783 | GF173101.5783 |
| 1/4     | 18     | 10,15 | 12 | 75 | 14,8 | 45 | 4 | GF173711.5784 | GF173111.5784 |
| 3/8     | 18     | 11,15 | 12 | 75 | 14,8 | 45 | 4 | GF173711.5785 | GF173111.5785 |
| 1/2     | 14     | 14,25 | 16 | 80 | 19   | 48 | 4 | GF173731.5786 | GF173131.5786 |
| 3/4     | 14     | 14,25 | 16 | 80 | 19   | 48 | 4 | GF173731.5787 | GF173131.5787 |
| 1" - 2" | 11 1/2 | 19,6  | 20 | 90 | 23,1 | 50 | 5 | GF173751.9684 | GF173151.9684 |

TICN



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

Nenngröße  
Nom. size

P

Gg/1" (tpi)

Ø d<sub>F</sub>

mm

Ø d<sub>2</sub>

mm

l<sub>1</sub>

mm

l<sub>2</sub>

mm

l<sub>4</sub>

mm

Z

(Flutes)

GF-KEG  
IKZ-HA  
TICN

GF-KEG  
IKZ-HB  
TICN

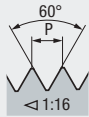
|         |        |       |    |    |      |    |   |               |               |
|---------|--------|-------|----|----|------|----|---|---------------|---------------|
| 1/16    | 27     | 5,9   | 8  | 55 | 9,8  | 36 | 3 | GF173706.5782 | GF173106.5782 |
| 1/8     | 27     | 7,65  | 8  | 55 | 9,8  | 36 | 3 | GF173706.5783 | GF173106.5783 |
| 1/4     | 18     | 10,15 | 12 | 75 | 14,8 | 45 | 4 | GF173716.5784 | GF173116.5784 |
| 3/8     | 18     | 11,15 | 12 | 75 | 14,8 | 45 | 4 | GF173716.5785 | GF173116.5785 |
| 1/2     | 14     | 14,25 | 16 | 80 | 19   | 48 | 4 | GF173736.5786 | GF173136.5786 |
| 3/4     | 14     | 14,25 | 16 | 80 | 19   | 48 | 4 | GF173736.5787 | GF173136.5787 |
| 1" - 2" | 11 1/2 | 19,6  | 20 | 90 | 23,1 | 50 | 5 | GF173756.9684 | GF173156.9684 |

Weitere Ausführungen auf Anfrage  
Further designs upon request

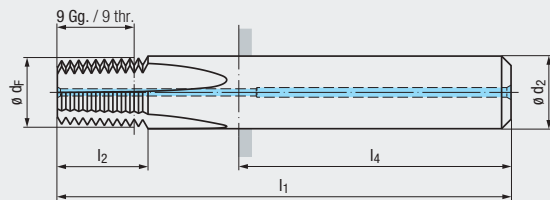
**Anwendungshinweis:** Es wird ein NC-Programm für schneckenförmiges Wendelnutfräsen benötigt, da sonst ein Absatz im gefrästen Gewinde entsteht  
**Application recommendation:** You must have an NC programme for spiral-worm keyway milling, otherwise the finished thread will have a stepped profile

**NPTF**

ANSI B1.20.3



Für kegeliges Innengewinde  
For internal tapered threads

**VHM**  
Carbide**RH + LH****Z3 - Z5****DIN 6535****GF-KEG**

Einsatzgebiete – Material  
Applications – material

» 358

**P** 1.1-5.1 **K** 1.1-4.2 **N** 1.1-1.5, 2.1-2.6  
**N** 3.1-4.2 **N** 5.1-5.2 **S** 1.1-1.3

**Nenngröße**

Nom. size

**P**

Gg/1" (tpi)

 **$\varnothing d_F$** 

mm

 **$\varnothing d_2$** 

mm

 **$l_1$** 

mm

 **$l_2$** 

mm

 **$l_4$** 

mm

**Z**

(Flutes)

**GF-KEG**  
**IKZN-HA****GF-KEG**  
**IKZN-HB**

GF193701.5782

GF193701.5783

GF193711.5784

GF193711.5785

GF193731.5786

GF193731.5787

GF193751.9684

GF193101.5782

GF193101.5783

GF193111.5784

GF193111.5785

GF193131.5786

GF193131.5787

GF193151.9684

**TICN**

Einsatzgebiete – Material  
Applications – material

» 358

**P** 1.1-5.1 **M** 1.1-4.1 **K** 1.1-4.2  
**N** 1.1-5.3 **S** 1.1-2.6 **H** 1.1-1.2

**Nenngröße**

Nom. size

**P**

Gg/1" (tpi)

 **$\varnothing d_F$** 

mm

 **$\varnothing d_2$** 

mm

 **$l_1$** 

mm

 **$l_2$** 

mm

 **$l_4$** 

mm

**Z**

(Flutes)

**GF-KEG**  
**IKZN-HA**  
**TICN****GF-KEG**  
**IKZN-HB**  
**TICN**

GF193706.5782

GF193706.5783

GF193716.5784

GF193716.5785

GF193736.5786

GF193736.5787

GF193756.9684

GF193106.5782

GF193106.5783

GF193116.5784

GF193116.5785

GF193136.5786

GF193136.5787

GF193156.9684

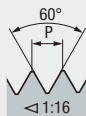
Weitere Ausführungen auf Anfrage  
Further designs upon request

**Anwendungshinweis:** Es wird ein NC-Programm für schneckenförmiges Wendelnutfräsen benötigt, da sonst ein Absatz im gefrästen Gewinde entsteht  
**Application recommendation:** You must have an NC programme for spiral-worm keyway milling, otherwise the finished thread will have a stepped profile

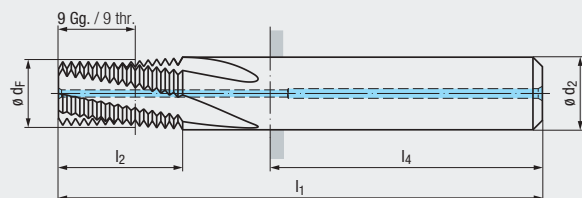
|                                                                                   |
|-----------------------------------------------------------------------------------|
| Product Finder                                                                    |
| $v_c / f_z$                                                                       |
| M                                                                                 |
| MF                                                                                |
| UNC<br>UN, UNS                                                                    |
| UNF<br>UNEF                                                                       |
| G, Rp                                                                             |
| NPT, NPTF<br>Rc, W                                                                |
| BSW, BSF                                                                          |
| Pg                                                                                |
| MJ<br>UNJC, UNJF                                                                  |
| EG (STI)                                                                          |
| SELF-LOCK                                                                         |
| Tr                                                                                |
| Zubehör<br>Accessories                                                            |
| BGF                                                                               |
| ZBGF                                                                              |
| GSF                                                                               |
| GF                                                                                |
| GF-VZ                                                                             |
| GF-KEG                                                                            |
| ZGF                                                                               |
| ZIRK-GF                                                                           |
| Gigant                                                                            |
| MoSys                                                                             |
|  |

# NPTF

ANSI B1.20.3



Für kegeliges Innengewinde  
For internal tapered threads



VHM  
Carbide

R15

RH + LH

Z3 - Z5



DIN 6535



GF-KEG-R15-Long



P 1.1-5.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.3

GF-KEG  
R15-Long-IKZ-HA

GF-KEG  
R15-Long-IKZ-HB

GF175901.5782  
GF175901.5783  
GF175911.5784  
GF175911.5785  
GF175931.5786  
GF175931.5787  
GF175951.9684

GF175301.5782  
GF175301.5783  
GF175311.5784  
GF175311.5785  
GF175331.5786  
GF175331.5787  
GF175351.9684

TICN



Einsatzgebiete – Material  
Applications – material

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

Nenngröße

Nom. size

Ø d<sub>1</sub>

P

Gg/1" (tpi)

Ø d<sub>f</sub>

mm

Ø d<sub>2</sub>

l<sub>1</sub>

l<sub>2</sub>

l<sub>4</sub>

Z

(Flutes)

1/16

1/8

1/4

3/8

1/2

3/4

1" - 2"

27

27

18

18

14

14

11 1/2

5,9

7,65

10,15

11,15

14,25

14,25

19,6

8

8

12

12

16

16

20

60

60

80

80

85

85

95

13,6

13,6

20,4

20,4

26,3

26,2

32

36

36

45

45

48

48

50

3

3

4

4

4

4

5

GF-KEG  
R15-Long-IKZ-HA  
TICN

GF-KEG  
R15-Long-IKZ-HB  
TICN

GF175906.5782  
GF175906.5783  
GF175916.5784  
GF175916.5785  
GF175936.5786  
GF175936.5787  
GF175956.9684

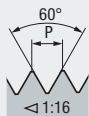
GF175306.5782  
GF175306.5783  
GF175316.5784  
GF175316.5785  
GF175336.5786  
GF175336.5787  
GF175356.9684

Weitere Ausführungen auf Anfrage  
Further designs upon request

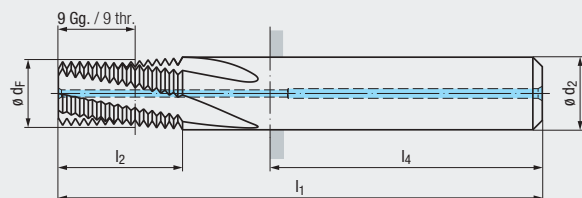
**Anwendungshinweis:** Es wird ein NC-Programm für schneckenförmiges Wendelnutfräsen benötigt, da sonst ein Absatz im gefrästen Gewinde entsteht  
**Application recommendation:** You must have an NC programme for spiral-worm keyway milling, otherwise the finished thread will have a stepped profile

**NPTF**

ANSI B1.20.3



Für kegeliges Innengewinde  
For internal tapered threads

**VHM  
Carbide****R15****RH + LH****Z3 - Z5****DIN 6535****GF-KEG-R15-Long**

Einsatzgebiete – Material  
Applications – material

» 358

**P** 1.1-5.1 **K** 1.1-4.2 **N** 1.1-1.5, 2.1-2.6  
**N** 3.1-4.2 **N** 5.1-5.2 **S** 1.1-1.3

**Nenngröße**

Nom. size

Ø d<sub>1</sub>

P

Gg/1" (tpi)

Ø d<sub>F</sub>

mm

Ø d<sub>2</sub>

mm

l<sub>1</sub>

mm

l<sub>2</sub>

mm

l<sub>4</sub>

mm

Z

(Flutes)

1/16

27

5,9

8

60

13,6

36

3

1/8

27

7,65

8

60

13,6

36

3

1/4

18

10,15

12

80

20,4

45

4

3/8

18

11,15

12

80

20,4

45

4

1/2

14

14,25

16

85

26,3

48

4

3/4

14

14,25

16

85

26,2

48

4

1" - 2"

11 1/2

19,6

20

95

32

50

5

**GF-KEG  
R15-Long-  
IKZN-HA****GF-KEG  
R15-Long-  
IKZN-HB**

GF195901.5782

GF195301.5782

GF195901.5783

GF195301.5783

GF195911.5784

GF195311.5784

GF195911.5785

GF195311.5785

GF195931.5786

GF195331.5786

GF195931.5787

GF195331.5787

GF195951.9684

GF195351.9684

**TICN**

Einsatzgebiete – Material  
Applications – material

» 358

**P** 1.1-5.1 **M** 1.1-4.1 **K** 1.1-4.2  
**N** 1.1-5.3 **S** 1.1-2.6 **H** 1.1-1.2

**Nenngröße**

Nom. size

Ø d<sub>1</sub>

P

Gg/1" (tpi)

Ø d<sub>F</sub>

mm

Ø d<sub>2</sub>

mm

l<sub>1</sub>

mm

l<sub>2</sub>

mm

l<sub>4</sub>

mm

Z

(Flutes)

1/16

27

5,9

8

60

13,6

36

3

1/8

27

7,65

8

60

13,6

36

3

1/4

18

10,15

12

80

20,4

45

4

3/8

18

11,15

12

80

20,4

45

4

1/2

14

14,25

16

85

26,3

48

4

3/4

14

14,25

16

85

26,2

48

4

1" - 2"

11 1/2

19,6

20

95

32

50

5

**GF-KEG  
R15-Long-  
IKZN-HA  
TICN****GF-KEG  
R15-Long-  
IKZN-HB  
TICN**

GF195906.5782

GF195306.5782

GF195906.5783

GF195306.5783

GF195916.5784

GF195316.5784

GF195916.5785

GF195316.5785

GF195936.5786

GF195336.5786

GF195936.5787

GF195336.5787

GF195956.9684

GF195356.9684

Weitere Ausführungen auf Anfrage  
Further designs upon request

**Anwendungshinweis:** Es wird ein NC-Programm für schneckenförmiges Wendelnutfräsen benötigt, da sonst ein Absatz im gefrästen Gewinde entsteht  
**Application recommendation:** You must have an NC programme for spiral-worm keyway milling, otherwise the finished thread will have a stepped profile

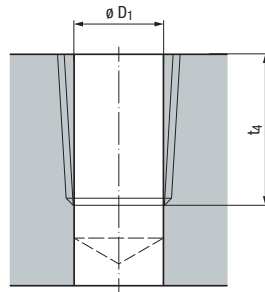
|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |

# Rc (BSPT)

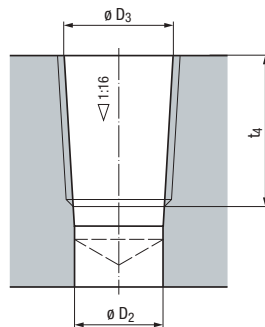
DIN EN 10226-2, ISO 7-1



a) Zylindrisch vorarbeiten  
Cylindrical preparation of thread hole



b) Kegelig vorarbeiten  
Tapered preparation of thread hole



EMUGE Rc-Gewindefräser sind für die Lochformen a) und b) geeignet.

EMUGE Rc thread milling cutters are suited for the hole forms a) and b).

| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing D_1$ | $t_4$ |
|---------------------------------------------|------------------|-------------------|-------|
| 1/16                                        | 28               | 6,15              | 7,85  |
| 1/8                                         | 28               | 8,15              | 7,85  |
| 1/4                                         | 19               | 10,85             | 11,65 |
| 3/8                                         | 19               | 14,3              | 12,05 |
| 1/2                                         | 14               | 17,8              | 15,9  |
| 3/4                                         | 14               | 23,2              | 16,75 |
| 1"                                          | 11               | 29,2              | 19,65 |
| 1 1/4                                       | 11               | 37,8              | 21,95 |
| 1 1/2                                       | 11               | 43,7              | 21,95 |
| 2"                                          | 11               | 55,2              | 26,25 |

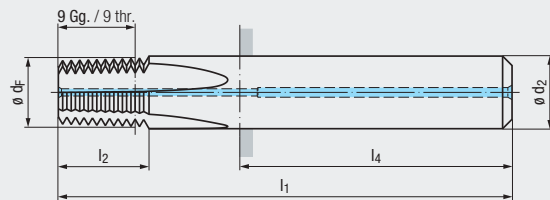
| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing D_2$ | $\varnothing D_3$<br>(JS11) | $t_4$ |
|---------------------------------------------|------------------|-------------------|-----------------------------|-------|
| 1/16                                        | 28               | 6,1               | 6,56                        | 7,85  |
| 1/8                                         | 28               | 8,1               | 8,57                        | 7,85  |
| 1/4                                         | 19               | 10,75             | 11,45                       | 11,65 |
| 3/8                                         | 19               | 14,25             | 14,95                       | 12,05 |
| 1/2                                         | 14               | 17,7              | 18,63                       | 15,9  |
| 3/4                                         | 14               | 23,1              | 24,12                       | 16,75 |
| 1"                                          | 11               | 29,1              | 30,29                       | 19,65 |
| 1 1/4                                       | 11               | 37,6              | 38,95                       | 21,95 |
| 1 1/2                                       | 11               | 43,5              | 44,85                       | 21,95 |
| 2"                                          | 11               | 55                | 56,66                       | 26,25 |





**Rc (BSPT)**

DIN EN 10226-2, ISO 7-1

**VHM**  
Carbide**RH + LH****Z3 - Z5****DIN 6535**Für kegeliges Innengewinde  
For internal tapered threadsEinsatzgebiete – Material  
Applications – material

» 358

Nenngröße

Nom. size

ø d<sub>1</sub>

P

Gg/1" (tpi)

ø d<sub>f</sub>

mm

ø d<sub>2</sub>

mm

l<sub>1</sub>

mm

l<sub>2</sub>

mm

l<sub>4</sub>

mm

Z

(Flutes)

1/8

28

7,65

8

55

8,6

36

3

1/4

19

10,15

12

75

14

45

4

3/8

19

11,15

12

75

13,9

45

4

1/2 - 3/4

14

14,25

16

80

19,1

48

4

1" - 1 1/2

11

19,6

20

90

24,3

50

5

**GF-KEG**

|                  |                  |                           |
|------------------|------------------|---------------------------|
| <b>P</b> 1.1-5.1 | <b>K</b> 1.1-4.2 | <b>N</b> 1.1-1.5, 2.1-2.6 |
| <b>N</b> 3.1-4.2 | <b>N</b> 5.1-5.2 | <b>S</b> 1.1-1.3          |

**GF-KEG**  
**IKZ-HA****GF-KEG**  
**IKZ-HB**

GF173701.4115

GF173101.4115

GF173711.4116

GF173111.4116

GF173711.4117

GF173111.4117

GF173731.9561

GF173131.9561

GF173751.9562

GF173151.9562

**TICN**Einsatzgebiete – Material  
Applications – material

» 358

Nenngröße

Nom. size

ø d<sub>1</sub>

P

Gg/1" (tpi)

ø d<sub>f</sub>

mm

ø d<sub>2</sub>

mm

l<sub>1</sub>

mm

l<sub>2</sub>

mm

l<sub>4</sub>

mm

Z

(Flutes)

1/8

28

7,65

8

55

8,6

36

3

1/4

19

10,15

12

75

14

45

4

3/8

19

11,15

12

75

13,9

45

4

1/2 - 3/4

14

14,25

16

80

19,1

48

4

1" - 1 1/2

11

19,6

20

90

24,3

50

5

|                  |                  |                  |
|------------------|------------------|------------------|
| <b>P</b> 1.1-5.1 | <b>M</b> 1.1-4.1 | <b>K</b> 1.1-4.2 |
| <b>N</b> 1.1-5.3 | <b>S</b> 1.1-2.6 | <b>H</b> 1.1-1.2 |

**GF-KEG**  
**IKZ-HA****GF-KEG**  
**IKZ-HB**

GF173706.4115

GF173106.4115

GF173716.4116

GF173116.4116

GF173716.4117

GF173116.4117

GF173736.9561

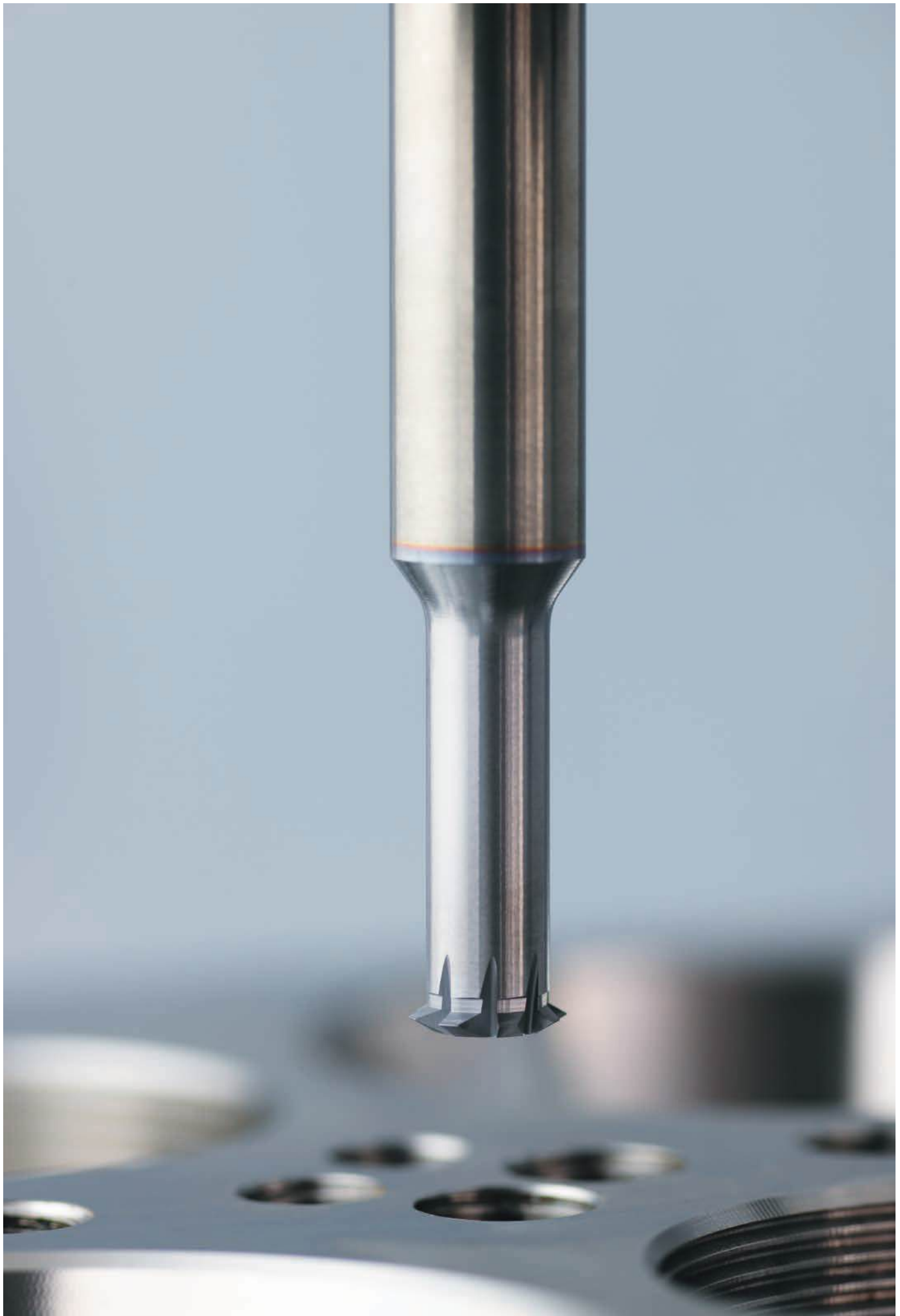
GF173136.9561

GF173756.9562

GF173156.9562

Weitere Ausführungen auf Anfrage  
Further designs upon request**Anwendungshinweis:** Es wird ein NC-Programm für schneckenförmiges Wendelnutfräsen benötigt, da sonst ein Absatz im gefrästen Gewinde entsteht  
**Application recommendation:** You must have an NC programme for spiral-worm keyway milling, otherwise the finished thread will have a stepped profileSchneideisen für kegelige  
Außengewinde siehe Seite 533 - 535Dies for external tapered threads,  
see page 533 - 535



Product  
Finder $v_c / f_z$ 

M

MF

UNC  
UN, UNSUNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

**ZGF**

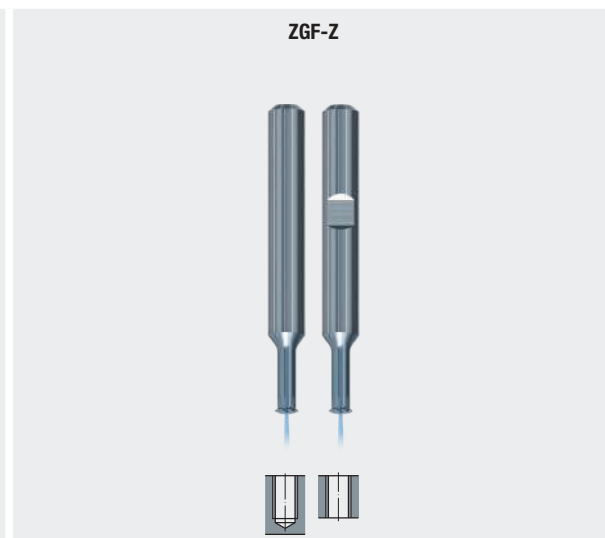
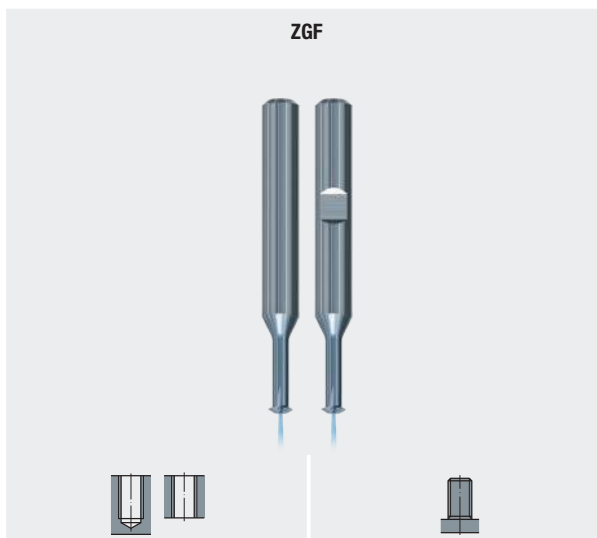
ZIRK-GF

Gigant

MoSys



| Product Finder         |
|------------------------|
| $V_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

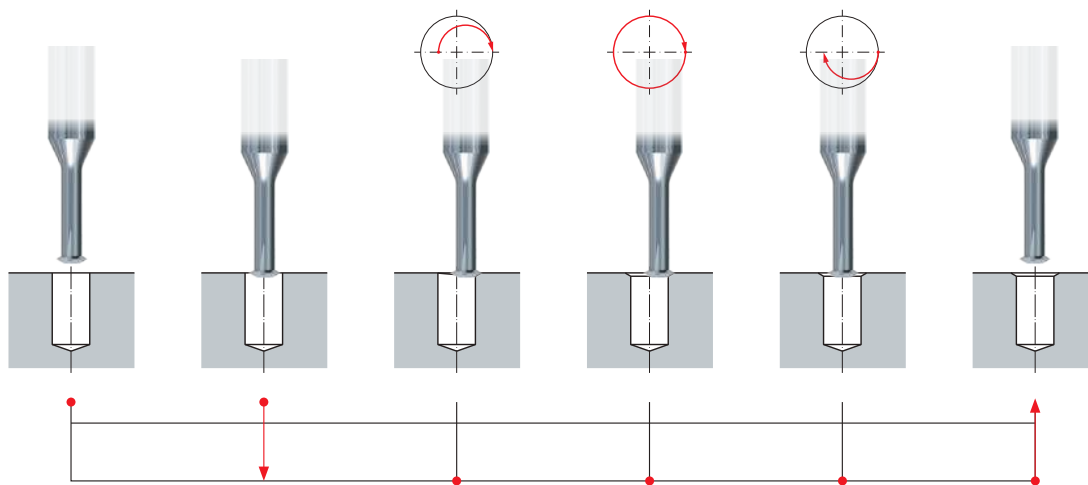


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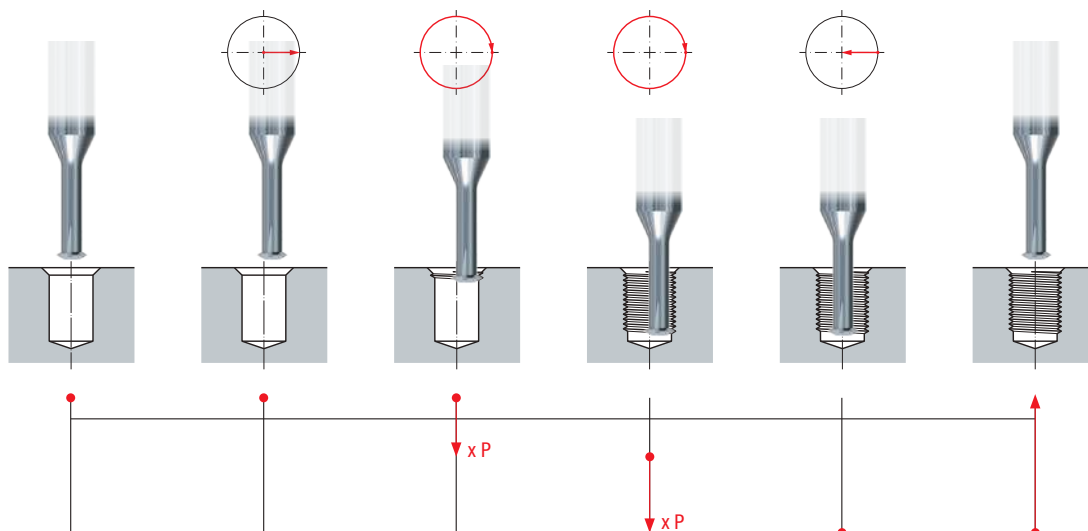
|                |           |     |     |
|----------------|-----------|-----|-----|
| <b>M</b>       | 466 - 468 |     | 469 |
| <b>MF</b>      | 466 - 468 |     | 469 |
| <b>UNC</b>     | 470 - 471 |     |     |
| <b>UNF</b>     | 470 - 471 |     |     |
| <b>G (BSP)</b> | 472       | 472 |     |

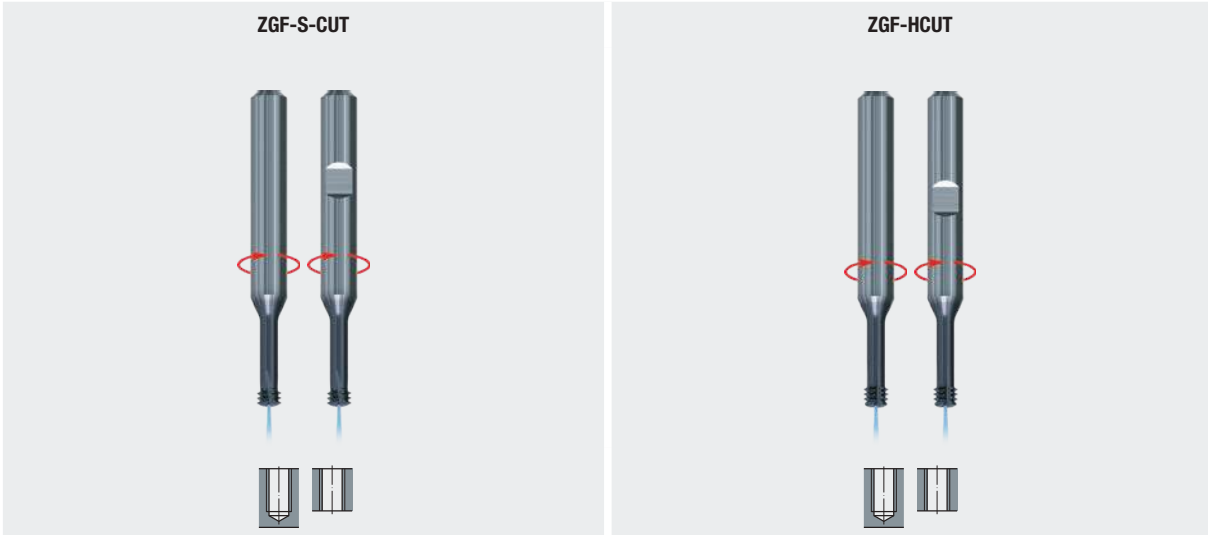
|            |
|------------|
| BGF        |
| ZBGF       |
| GSF        |
| GF         |
| GF-VZ      |
| GF-KEG     |
| <b>ZGF</b> |
| ZIRK-GF    |
| Gigant     |
| MoSys      |

### Zirkulares Anfasen · Circular chamfering



### Gewindefräszyklus · Thread milling cycle





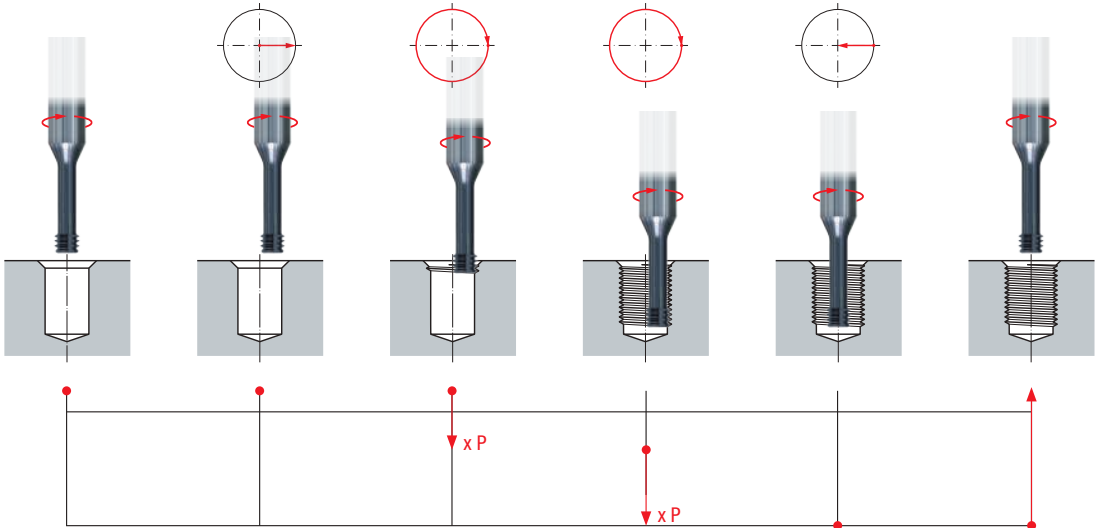
Seite · Page

|           |           |                |
|-----------|-----------|----------------|
| 473       | 476       | <b>M</b>       |
| 473       | 476       | <b>MF</b>      |
| 474       | 477       | <b>UNC</b>     |
| 474 - 475 | 477 - 478 | <b>UNF</b>     |
|           |           | <b>G (BSP)</b> |

| Product Finder         |
|------------------------|
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

|            |
|------------|
| BGF        |
| ZBGF       |
| GSF        |
| GF         |
| GF-VZ      |
| GF-KEG     |
| <b>ZGF</b> |
| ZIRK-GF    |
| Gigant     |
| MoSys      |

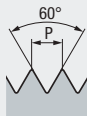
Gewindefräszyklus · Thread milling cycle



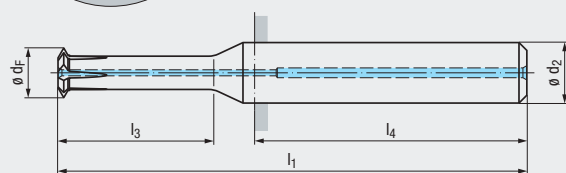
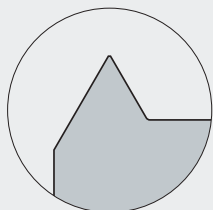
|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

# M, MF

DIN 13



Für Innengewinde  
For internal threads



VHM  
Carbide

RH + LH

Z3 - Z5



DIN 6535



Zum Anfasen geeignet  
Suitable for chamfering



ZGF



Einsatzgebiete – Material  
Applications – material

» 358

|   |         |   |         |   |                  |
|---|---------|---|---------|---|------------------|
| P | 1.1-5.1 | K | 1.1-4.2 | N | 1.1-1.5, 2.1-2.6 |
| N | 3.1-4.2 | N | 5.1-5.2 | S | 1.1-1.3          |

Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

| ø d <sub>1</sub><br>mm | P<br>mm     | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | 2x d <sub>1</sub><br>HA | 2x d <sub>1</sub><br>IKZ-HA | 2x d <sub>1</sub><br>IKZ-HB |
|------------------------|-------------|------------------------|------------------|----------------|----------------|----------------|---------------|-------------------------|-----------------------------|-----------------------------|
| ≥ M 1                  | 0,1 - 0,25  | 0,7                    | 3                | 39             | 3,3            | 28             | 3             | GF253701.0010           |                             |                             |
| ≥ M 1,4                | 0,12 - 0,35 | 1,04                   | 3                | 39             | 3,7            | 28             | 3             | GF253701.0014           |                             |                             |
| ≥ M 2                  | 0,15 - 0,45 | 1,52                   | 3                | 39             | 5              | 28             | 3             | GF253701.0020           |                             |                             |
| ≥ M 2,5                | 0,17 - 0,5  | 1,95                   | 3                | 39             | 6,3            | 28             | 3             | GF253701.0025           |                             |                             |
| ≥ M 3,5                | 0,22 - 0,75 | 2,78                   | 4                | 42             | 9,4            | 28             | 3             | GF253701.0035           |                             |                             |
| ≥ M 5                  | 0,3 - 1     | 4                      | 6                | 55             | 14,5           | 36             | 4             | GF253701.0050           |                             |                             |
| ≥ M 8                  | 0,43 - 1,5  | 6,5                    | 8                | 62             | 20,6           | 36             | 5             |                         | GF253701.0080               | GF253101.0080               |
| ≥ M12                  | 0,6 - 2     | 9,9                    | 10               | 78             | 32,8           | 40             | 5             |                         | GF253701.0112               | GF253101.0112               |

|         |
|---------|
| BGF     |
| ZBGF    |
| GSF     |
| GF      |
| GF-VZ   |
| GF-KEG  |
| ZGF     |
| ZIRK-GF |
| Gigant  |
| MoSys   |

TICN



Einsatzgebiete – Material  
Applications – material

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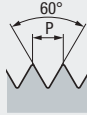
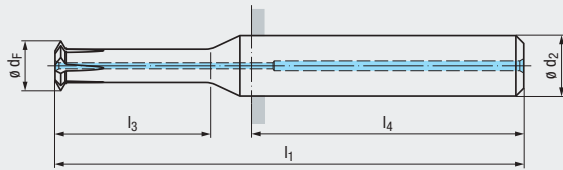
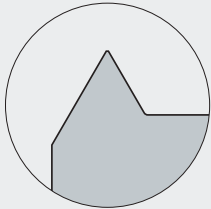
|   |         |   |         |   |         |
|---|---------|---|---------|---|---------|
| P | 1.1-5.1 | M | 1.1-4.1 | K | 1.1-4.2 |
| N | 1.1-5.3 | S | 1.1-2.6 | H | 1.1-1.2 |

|                        |             |                        |                  |                |                |                |               |               | ZGF<br>2xd <sub>1</sub><br>HA<br>TICN | ZGF<br>2xd <sub>1</sub><br>IKZ-HA<br>TICN | ZGF<br>2xd <sub>1</sub><br>IKZ-HB<br>TICN |
|------------------------|-------------|------------------------|------------------|----------------|----------------|----------------|---------------|---------------|---------------------------------------|-------------------------------------------|-------------------------------------------|
| ø d <sub>1</sub><br>mm | P<br>mm     | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) |               |                                       |                                           |                                           |
| ≥ M 1                  | 0,1 - 0,25  | 0,7                    | 3                | 39             | 3,3            | 28             | 3             | GF253706.0010 |                                       |                                           |                                           |
| ≥ M 1,4                | 0,12 - 0,35 | 1,04                   | 3                | 39             | 3,7            | 28             | 3             | GF253706.0014 |                                       |                                           |                                           |
| ≥ M 2                  | 0,15 - 0,45 | 1,52                   | 3                | 39             | 5              | 28             | 3             | GF253706.0020 |                                       |                                           |                                           |
| ≥ M 2,5                | 0,17 - 0,5  | 1,95                   | 3                | 39             | 6,3            | 28             | 3             | GF253706.0025 |                                       |                                           |                                           |
| ≥ M 3,5                | 0,22 - 0,75 | 2,78                   | 4                | 42             | 9,4            | 28             | 3             | GF253706.0035 |                                       |                                           |                                           |
| ≥ M 5                  | 0,3 - 1     | 4                      | 6                | 55             | 14,5           | 36             | 4             | GF253706.0050 |                                       |                                           |                                           |
| ≥ M 8                  | 0,43 - 1,5  | 6,5                    | 8                | 62             | 20,6           | 36             | 5             |               | GF253706.0080                         | GF253106.0080                             |                                           |
| ≥ M12                  | 0,6 - 2     | 9,9                    | 10               | 78             | 32,8           | 40             | 5             |               | GF253706.0112                         | GF253106.0112                             |                                           |

Weitere Ausführungen auf Anfrage  
Further designs upon request

**M, MF**

DIN 13

Für Innengewinde  
For internal threads**VHM**  
Carbide

RH + LH

**Z3 - Z5****DIN 6535**HA  
HBZum Anfasen geeignet  
Suitable for chamfering**ZGF**Einsatzgebiete – Material  
Applications – material

» 358

|                  |                  |                           |
|------------------|------------------|---------------------------|
| <b>P</b> 1.1-5.1 | <b>K</b> 1.1-4.2 | <b>N</b> 1.1-1.5, 2.1-2.6 |
| <b>N</b> 3.1-4.2 | <b>N</b> 5.1-5.2 | <b>S</b> 1.1-1.3          |

Gewindetiefe  
Thread depth**3 x d<sub>1</sub>**

| ø d <sub>1</sub><br>mm | P<br>mm     | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | ZGF<br>3xd <sub>1</sub><br>HA | ZGF<br>3xd <sub>1</sub><br>IKZ-HA | ZGF<br>3xd <sub>1</sub><br>IKZ-HB |
|------------------------|-------------|------------------------|------------------|----------------|----------------|----------------|---------------|-------------------------------|-----------------------------------|-----------------------------------|
| ≥ M 1                  | 0,1 - 0,25  | 0,7                    | 3                | 39             | 3,3            | 28             | 3             | GF273701.0010                 |                                   |                                   |
| ≥ M 1,6                | 0,14 - 0,35 | 1,18                   | 3                | 39             | 5,2            | 28             | 3             | GF273701.0016                 |                                   |                                   |
| ≥ M 2                  | 0,15 - 0,4  | 1,52                   | 3                | 39             | 6,4            | 28             | 3             | GF273701.0020                 |                                   |                                   |
| ≥ M 2,5                | 0,17 - 0,45 | 1,96                   | 3                | 39             | 8              | 28             | 3             | GF273701.0025                 |                                   |                                   |
| ≥ M 3                  | 0,18 - 0,5  | 2,4                    | 3                | 41             | 9,5            | 28             | 3             | GF273701.0030                 |                                   |                                   |
| ≥ M 4                  | 0,26 - 0,7  | 3,15                   | 4                | 44             | 12,7           | 28             | 3             | GF273701.0040                 |                                   |                                   |
| ≥ M 5                  | 0,28 - 0,8  | 4,04                   | 6                | 56             | 15,8           | 36             | 4             | GF273701.0050                 |                                   |                                   |
| ≥ M 6                  | 0,35 - 1    | 4,8                    | 6                | 59             | 19             | 36             | 4             | GF273701.0060                 |                                   |                                   |
| ≥ M 8                  | 0,43 - 1,25 | 6,5                    | 8                | 65             | 25,3           | 36             | 5             |                               | GF273701.0080                     | GF273101.0080                     |
| ≥ M10                  | 0,51 - 1,5  | 8,2                    | 10               | 77             | 31,5           | 40             | 5             |                               | GF273701.0100                     | GF273101.0100                     |
| ≥ M12                  | 0,6 - 1,75  | 9,9                    | 10               | 82             | 37,8           | 40             | 5             |                               | GF273701.0112                     | GF273101.0112                     |
| ≥ M14                  | 0,68 - 2    | 11,6                   | 12               | 94             | 44             | 45             | 5             |                               | GF273701.0114                     | GF273101.0114                     |
| ≥ M16                  | 0,68 - 2    | 13,6                   | 14               | 100            | 50             | 45             | 5             |                               | GF273701.0116                     | GF273101.0116                     |

**TICN**Einsatzgebiete – Material  
Applications – material

» 358

|                  |                  |                  |
|------------------|------------------|------------------|
| <b>P</b> 1.1-5.1 | <b>M</b> 1.1-4.1 | <b>K</b> 1.1-4.2 |
| <b>N</b> 1.1-5.3 | <b>S</b> 1.1-2.6 | <b>H</b> 1.1-1.2 |

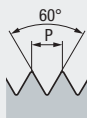
| ø d <sub>1</sub><br>mm | P<br>mm     | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | ZGF<br>3xd <sub>1</sub><br>HA<br>TICN | ZGF<br>3xd <sub>1</sub><br>IKZ-HA<br>TICN | ZGF<br>3xd <sub>1</sub><br>IKZ-HB<br>TICN |
|------------------------|-------------|------------------------|------------------|----------------|----------------|----------------|---------------|---------------------------------------|-------------------------------------------|-------------------------------------------|
| ≥ M 1                  | 0,1 - 0,25  | 0,7                    | 3                | 39             | 3,3            | 28             | 3             | GF273706.0010                         |                                           |                                           |
| ≥ M 1,6                | 0,14 - 0,35 | 1,18                   | 3                | 39             | 5,2            | 28             | 3             | GF273706.0016                         |                                           |                                           |
| ≥ M 2                  | 0,15 - 0,4  | 1,52                   | 3                | 39             | 6,4            | 28             | 3             | GF273706.0020                         |                                           |                                           |
| ≥ M 2,5                | 0,17 - 0,45 | 1,96                   | 3                | 39             | 8              | 28             | 3             | GF273706.0025                         |                                           |                                           |
| ≥ M 3                  | 0,18 - 0,5  | 2,4                    | 3                | 41             | 9,5            | 28             | 3             | GF273706.0030                         |                                           |                                           |
| ≥ M 4                  | 0,26 - 0,7  | 3,15                   | 4                | 44             | 12,7           | 28             | 3             | GF273706.0040                         |                                           |                                           |
| ≥ M 5                  | 0,28 - 0,8  | 4,04                   | 6                | 56             | 15,8           | 36             | 4             | GF273706.0050                         |                                           |                                           |
| ≥ M 6                  | 0,35 - 1    | 4,8                    | 6                | 59             | 19             | 36             | 4             | GF273706.0060                         |                                           |                                           |
| ≥ M 8                  | 0,43 - 1,25 | 6,5                    | 8                | 65             | 25,3           | 36             | 5             |                                       | GF273706.0080                             | GF273106.0080                             |
| ≥ M10                  | 0,51 - 1,5  | 8,2                    | 10               | 77             | 31,5           | 40             | 5             |                                       | GF273706.0100                             | GF273106.0100                             |
| ≥ M12                  | 0,6 - 1,75  | 9,9                    | 10               | 82             | 37,8           | 40             | 5             |                                       | GF273706.0112                             | GF273106.0112                             |
| ≥ M14                  | 0,68 - 2    | 11,6                   | 12               | 94             | 44             | 45             | 5             |                                       | GF273706.0114                             | GF273106.0114                             |
| ≥ M16                  | 0,68 - 2    | 13,6                   | 14               | 100            | 50             | 45             | 5             |                                       | GF273706.0116                             | GF273106.0116                             |

Weitere Ausführungen auf Anfrage  
Further designs upon request

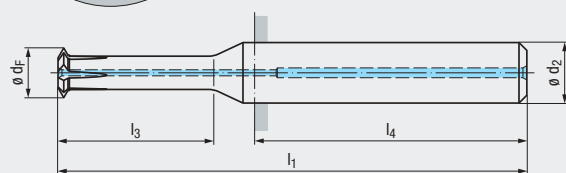
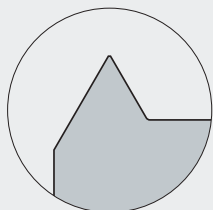
|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

# M, MF

DIN 13



Für Innengewinde  
For internal threads



VHM  
Carbide

TICN

RH + LH

Z2 - Z5



DIN 6535



Zum Anfasen geeignet  
Suitable for chamfering



ZGF



new



new



new



Einsatzgebiete – Material  
Applications – material

» 358

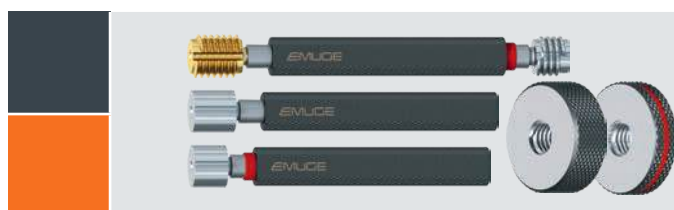
|           |           |           |
|-----------|-----------|-----------|
| P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 |
| N 1.1-5.3 | S 1.1-2.6 | H 1.1-1.2 |

Gewindetiefe  
Thread depth

4 x d<sub>1</sub>

| BGF    | Ø d <sub>1</sub><br>mm | P<br>mm     | Ø d <sub>F</sub><br>mm | Ø d <sub>2</sub> | l <sub>1</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | ZGF<br>4xd <sub>1</sub><br>HA<br>TICN | ZGF<br>4xd <sub>1</sub><br>IKZ-HA<br>TICN | ZGF<br>4xd <sub>1</sub><br>IKZ-HB<br>TICN |
|--------|------------------------|-------------|------------------------|------------------|----------------|----------------|----------------|---------------|---------------------------------------|-------------------------------------------|-------------------------------------------|
| ZBGF   | ≥ M 1,6                | 0,14 - 0,35 | 1,18                   | 3                | 39             | 6,8            | 28             | 2             | GF2A3706.0016                         |                                           |                                           |
|        | ≥ M 2                  | 0,15 - 0,4  | 1,52                   | 3                | 39             | 8,4            | 28             | 3             | GF2A3706.0020                         |                                           |                                           |
| GSF    | ≥ M 2,5                | 0,17 - 0,45 | 1,96                   | 3                | 40             | 10,5           | 28             | 3             | GF2A3706.0025                         |                                           |                                           |
|        | ≥ M 3                  | 0,18 - 0,5  | 2,4                    | 3                | 42             | 12,5           | 28             | 3             | GF2A3706.0030                         |                                           |                                           |
| GF     | ≥ M 4                  | 0,26 - 0,7  | 3,15                   | 4                | 46             | 16,7           | 28             | 3             | GF2A3706.0040                         |                                           |                                           |
|        | ≥ M 5                  | 0,28 - 0,8  | 4,04                   | 6                | 59             | 20,8           | 36             | 4             | GF2A3706.0050                         |                                           |                                           |
| GF-VZ  | ≥ M 6                  | 0,35 - 1    | 4,8                    | 6                | 63             | 25             | 36             | 4             | GF2A3706.0060                         |                                           |                                           |
|        | ≥ M 8                  | 0,43 - 1,25 | 6,5                    | 8                | 72             | 33,3           | 36             | 5             |                                       | GF2A3706.0080                             | GF2A3106.0080                             |
| GF-KEG | ≥ M10                  | 0,51 - 1,5  | 8,2                    | 10               | 84             | 41,5           | 40             | 5             |                                       | GF2A3706.0100                             | GF2A3106.0100                             |
|        | ≥ M12                  | 0,6 - 1,75  | 9,9                    | 10               | 92             | 49,8           | 40             | 5             |                                       | GF2A3706.0112                             | GF2A3106.0112                             |
| ZGF    | ≥ M14                  | 0,68 - 2    | 11,6                   | 12               | 105            | 58             | 45             | 5             |                                       | GF2A3706.0114                             | GF2A3106.0114                             |
|        | ≥ M16                  | 0,68 - 2    | 13,6                   | 14               | 113            | 66             | 45             | 5             |                                       | GF2A3706.0116                             | GF2A3106.0116                             |

Weitere Ausführungen auf Anfrage  
Further designs upon request



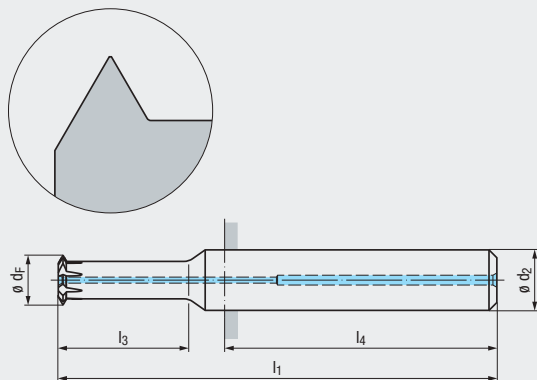
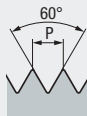
Gewindelehren  
siehe Seite 541 - 594

Thread gauges,  
see page 541 - 594



**M, MF**

DIN 13

Für Innengewinde  
For internal threadsVHM  
Carbide

TICN

RH + LH

Z5 - Z8

DIN 6535

HA  
HBZum Anfasen geeignet  
Suitable for chamfering

ZGF-Z

Einsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

**2 x d<sub>1</sub>**

| $\varnothing d_1$<br>mm | P<br>mm     | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_3$ | $l_4$ | Z<br>(Flutes) | ZGF-Z<br>2xd <sub>1</sub><br>HA<br>TICN | ZGF-Z<br>2xd <sub>1</sub><br>IKZ-HA<br>TICN | ZGF-Z<br>2xd <sub>1</sub><br>IKZ-HB<br>TICN |
|-------------------------|-------------|-------------------------|-------------------|-------|-------|-------|---------------|-----------------------------------------|---------------------------------------------|---------------------------------------------|
| ≥ M 1,6                 | 0,14 - 0,35 | 1,18                    | 3                 | 39    | 3,6   | 28    | 5             | GF293746.0016                           |                                             |                                             |
| ≥ M 2                   | 0,15 - 0,4  | 1,52                    | 3                 | 39    | 4,4   | 28    | 6             | GF293746.0020                           |                                             |                                             |
| ≥ M 2,5                 | 0,17 - 0,45 | 1,96                    | 3                 | 39    | 5,5   | 28    | 6             | GF293746.0025                           |                                             |                                             |
| ≥ M 3                   | 0,18 - 0,5  | 2,4                     | 3                 | 39    | 6,5   | 28    | 6             | GF293746.0030                           |                                             |                                             |
| ≥ M 4                   | 0,26 - 0,7  | 3,15                    | 4                 | 41    | 8,7   | 28    | 6             | GF293746.0040                           |                                             |                                             |
| ≥ M 5                   | 0,28 - 0,8  | 4,04                    | 6                 | 51    | 10,8  | 36    | 7             | GF293746.0050                           |                                             |                                             |
| ≥ M 6                   | 0,36 - 1    | 4,8                     | 6                 | 53    | 13    | 36    | 7             | GF293746.0060                           |                                             |                                             |
| ≥ M 8                   | 0,44 - 1,25 | 6,5                     | 8                 | 58    | 17,3  | 36    | 7             |                                         | GF293746.0080                               | GF293146.0080                               |
| ≥ M10                   | 0,52 - 1,5  | 8,2                     | 10                | 67    | 21,5  | 40    | 8             |                                         | GF293746.0100                               | GF293146.0100                               |
| ≥ M12                   | 0,6 - 1,75  | 9,9                     | 10                | 70    | 25,8  | 40    | 8             |                                         | GF293746.0112                               | GF293146.0112                               |

Weitere Ausführungen auf Anfrage  
Further designs upon requestProduct  
Finderv<sub>c</sub> / f<sub>z</sub>

M

MF

UNC  
UN, UNSUNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys

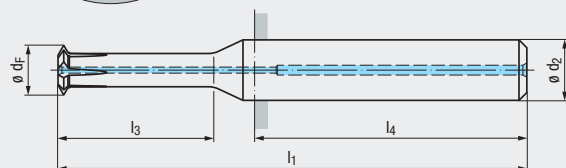
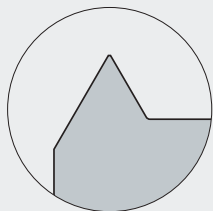


|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

# UNC, UNF

ASME B1.1

Für Innengewinde  
For internal threads



VHM  
Carbide

RH + LH

Z3

DIN 6535

HA

$\varnothing d_1$



Zum Anfasen geeignet  
Suitable for chamfering



ZGF



Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 K 1.1-4.2 N 1.1-1.5, 2.1-2.6  
N 3.1-4.2 N 5.1-5.2 S 1.1-1.3

Gewindetiefe  
Thread depth

2 x  $d_1$

| $\varnothing d_1$<br>inch | P<br>Gg/1" (tpi) | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_3$ | $l_4$ | Z<br>(Flutes) | ZGF<br>2x $d_1$<br>HA |
|---------------------------|------------------|-------------------------|-------------------|-------|-------|-------|---------------|-----------------------|
| ≥ Nr. 4                   | 80 - 40          | 2,06                    | 3                 | 39    | 6,7   | 28    | 3             | GF253701.5003         |
| ≥ Nr. 6                   | 80 - 40          | 2,55                    | 3                 | 39    | 7,4   | 28    | 3             | GF253701.5005         |
| ≥ Nr. 8                   | 80 - 32          | 3,21                    | 4                 | 42    | 8,8   | 28    | 3             | GF253701.5006         |

TICN



Einsatzgebiete – Material  
Applications – material

» 358

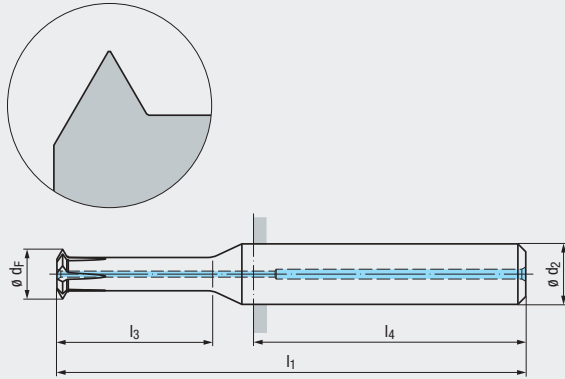
P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

| $\varnothing d_1$<br>inch | P<br>Gg/1" (tpi) | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_3$ | $l_4$ | Z<br>(Flutes) | ZGF<br>2x $d_1$<br>HA<br>TICN |
|---------------------------|------------------|-------------------------|-------------------|-------|-------|-------|---------------|-------------------------------|
| ≥ Nr. 4                   | 80 - 40          | 2,06                    | 3                 | 39    | 6,7   | 28    | 3             | GF253706.5003                 |
| ≥ Nr. 6                   | 80 - 40          | 2,55                    | 3                 | 39    | 7,4   | 28    | 3             | GF253706.5005                 |
| ≥ Nr. 8                   | 80 - 32          | 3,21                    | 4                 | 42    | 8,8   | 28    | 3             | GF253706.5006                 |

Weitere Ausführungen auf Anfrage  
Further designs upon request

# UNC, UNF

ASME B1.1

Für Innengewinde  
For internal threadsVHM  
Carbide

TiCN

RH + LH

Z3 - Z6

DIN 6535

HA  
HBZum Anfasen geeignet  
Suitable for chamfering

ZGF

Einsatzgebiete – Material  
Applications – material

» 358

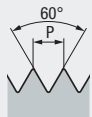
P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

Gewindetiefe  
Thread depth3 x  $d_1$ 

| $\varnothing d_1$<br>inch | P<br>Gg/1" (tpi) | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_3$ | $l_4$ | Z<br>(Flutes) | ZGF<br>3xd <sub>1</sub><br>HA<br>TiCN | ZGF<br>3xd <sub>1</sub><br>IKZ-HA<br>TiCN | ZGF<br>3xd <sub>1</sub><br>IKZ-HB<br>TiCN |
|---------------------------|------------------|-------------------------|-------------------|-------|-------|-------|---------------|---------------------------------------|-------------------------------------------|-------------------------------------------|
| ≥ Nr. 2                   | 80-56            | 1,7                     | 3                 | 39    | 7     | 28    | 3             | GF273706.5001                         |                                           |                                           |
| ≥ Nr. 4                   | 80-40            | 2,15                    | 3                 | 40    | 9,2   | 28    | 3             | GF273706.5003                         |                                           |                                           |
| ≥ Nr. 6                   | 80-32            | 2,7                     | 3                 | 42    | 11,3  | 28    | 3             | GF273706.5005                         |                                           |                                           |
| ≥ Nr. 8                   | 80-32            | 3,21                    | 4                 | 44    | 13,3  | 28    | 3             | GF273706.5006                         |                                           |                                           |
| ≥ Nr.10                   | 72-24            | 3,7                     | 4                 | 46    | 15,5  | 28    | 3             | GF273706.5007                         |                                           |                                           |
| ≥ 1/4                     | 56-20            | 4,95                    | 6                 | 59    | 20,3  | 36    | 4             | GF273706.5009                         |                                           |                                           |
| ≥ 5/16                    | 48-18            | 6,3                     | 8                 | 65    | 25,2  | 36    | 4             |                                       | GF273706.5010                             | GF273106.5010                             |
| ≥ 3/8                     | 48-16            | 7,7                     | 8                 | 68    | 30,2  | 36    | 5             |                                       | GF273706.5011                             | GF273106.5011                             |
| ≥ 7/16                    | 40-14            | 9                       | 10                | 78    | 35,2  | 40    | 5             |                                       | GF273706.5012                             | GF273106.5012                             |
| ≥ 1/2                     | 36-12            | 10,35                   | 12                | 90    | 40,1  | 45    | 5             |                                       | GF273706.5013                             | GF273106.5013                             |

# UNF

ASME B1.1

Einsatzgebiete – Material  
Applications – material

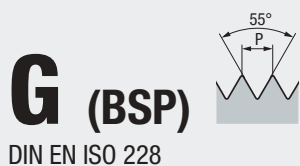
» 358

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

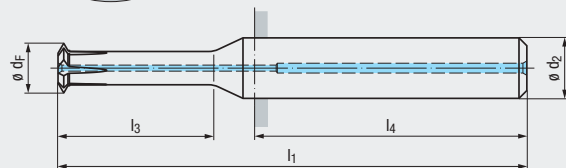
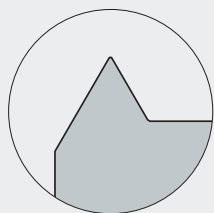
| $\varnothing d_1$<br>inch | P<br>Gg/1" (tpi) | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_3$ | $l_4$ | Z<br>(Flutes) | ZGF<br>3xd <sub>1</sub><br>HA<br>TiCN | ZGF<br>3xd <sub>1</sub><br>IKZ-HA<br>TiCN | ZGF<br>3xd <sub>1</sub><br>IKZ-HB<br>TiCN |
|---------------------------|------------------|-------------------------|-------------------|-------|-------|-------|---------------|---------------------------------------|-------------------------------------------|-------------------------------------------|
| ≥ Nr. 2                   | 80-64            | 1,76                    | 3                 | 39    | 7     | 28    | 4             | GF273706.5035                         |                                           |                                           |
| ≥ Nr. 4                   | 80-48            | 2,27                    | 3                 | 39    | 9,1   | 28    | 3             | GF273706.5037                         |                                           |                                           |
| ≥ Nr. 6                   | 80-40            | 2,79                    | 3                 | 42    | 11,2  | 28    | 4             | GF273706.5039                         |                                           |                                           |
| ≥ Nr. 8                   | 80-36            | 3,34                    | 4                 | 45    | 13,2  | 28    | 4             | GF273706.5040                         |                                           |                                           |
| ≥ Nr.10                   | 80-32            | 3,9                     | 4                 | 46    | 15,3  | 28    | 4             | GF273706.5041                         |                                           |                                           |
| ≥ 1/4                     | 80-28            | 5,25                    | 6                 | 59    | 20    | 36    | 4             | GF273706.5043                         |                                           |                                           |
| ≥ 5/16                    | 64-24            | 6,6                     | 8                 | 65    | 24,9  | 36    | 5             |                                       | GF273706.5044                             | GF273106.5044                             |
| ≥ 3/8                     | 64-24            | 8,2                     | 10                | 74    | 29,6  | 40    | 5             |                                       | GF273706.5045                             | GF273106.5045                             |
| ≥ 7/16                    | 60-20            | 9,55                    | 10                | 77    | 34,6  | 40    | 5             |                                       | GF273706.5046                             | GF273106.5046                             |
| ≥ 1/2                     | 60-20            | 11,1                    | 12                | 90    | 39,4  | 45    | 6             |                                       | GF273706.5047                             | GF273106.5047                             |

Weitere Ausführungen auf Anfrage  
Further designs upon request

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |



Für Innen- und Außengewinde  
For internal and external threads



VHM  
Carbide

TICN

RH + LH

Z5

DIN 6535

HA  
HB



Zum Anfasen geeignet  
Suitable for chamfering



ZGF



Einsatzgebiete – Material  
Applications – material

» 358

|   |         |   |         |   |         |
|---|---------|---|---------|---|---------|
| P | 1.1-5.1 | M | 1.1-4.1 | K | 1.1-4.2 |
| N | 1.1-5.3 | S | 1.1-2.6 | H | 1.1-1.2 |

Gewindetiefe  
Thread depth

2 x  $d_1$

| $\phi d_1$<br>inch | P<br>Gg/1" (tpi) | $\phi d_F$<br>mm | $\phi d_2$ | $l_1$ | $l_3$ | $l_4$ | Z<br>(Flutes) | ZGF<br>2xd <sub>1</sub><br>IKZ-HA<br>TICN | ZGF<br>2xd <sub>1</sub><br>IKZ-HB<br>TICN |
|--------------------|------------------|------------------|------------|-------|-------|-------|---------------|-------------------------------------------|-------------------------------------------|
| G 1/8              | 28               | 7,9              | 8          | 62    | 20,4  | 36    | 5             | GF253706.4035                             | GF253106.4035                             |
| G 1/4 - G 3/8      | 19               | 9,9              | 10         | 78    | 34,6  | 40    | 5             | GF253706.4036                             | GF253106.4036                             |

Weitere Ausführungen auf Anfrage  
Further designs upon request

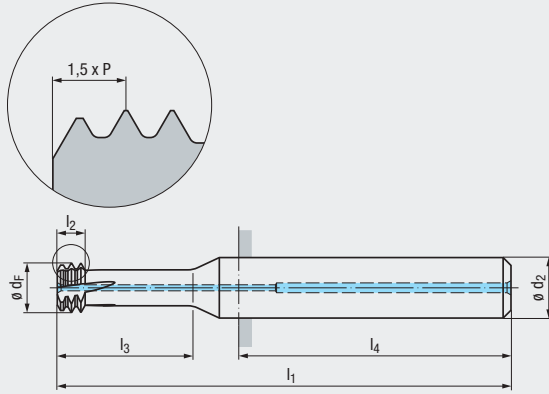


Gewinde-Tiefenlehrdorne  
siehe Seite 588 - 591

Thread depth plug gauges,  
see page 588 - 591

**M, MF**

DIN 13

Für Innengewinde  
For internal threadsEinsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depth

| $\emptyset d_1$<br>mm | P<br>mm | $\emptyset d_F$<br>mm | $\emptyset d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) |
|-----------------------|---------|-----------------------|-----------------|-------|-------|-------|-------|---------------|
| ≥ M 1,6               | 0,35    | 1,18                  | 3               | 39    | 1,1   | 3,7   | 28    | 3             |
| ≥ M 2                 | 0,4     | 1,52                  | 3               | 39    | 1,2   | 4,6   | 28    | 3             |
| ≥ M 2,5               | 0,45    | 1,95                  | 3               | 39    | 1,4   | 5,7   | 28    | 3             |
| ≥ M 3                 | 0,5     | 2,4                   | 3               | 39    | 1,5   | 6,8   | 28    | 4             |
| ≥ M 4                 | 0,7     | 3,15                  | 4               | 42    | 2,1   | 9,1   | 28    | 4             |
| ≥ M 5                 | 0,8     | 4,04                  | 6               | 52    | 2,4   | 11,2  | 36    | 4             |
| ≥ M 6                 | 1       | 4,8                   | 6               | 55    | 3     | 13,5  | 36    | 4             |
| ≥ M 8                 | 1,25    | 6,5                   | 8               | 60    | 3,8   | 17,9  | 36    | 4             |
| ≥ M10                 | 1,5     | 8,2                   | 10              | 70    | 4,5   | 22,3  | 40    | 5             |
| ≥ M12                 | 1,75    | 9,9                   | 10              | 74    | 5,3   | 26,6  | 40    | 5             |
| ≥ M14                 | 2       | 11,6                  | 12              | 80    | 6     | 31    | 45    | 5             |
| ≥ M16                 | 2       | 13,6                  | 14              | 85    | 6     | 35    | 45    | 6             |
| ≥ M20                 | 2,5     | 17                    | 18              | 102   | 7,5   | 43,8  | 48    | 6             |
| ≥ M24                 | 3       | 19,9                  | 20              | 110   | 9     | 52,5  | 50    | 6             |

Gewindetiefe  
Thread depth

| $\emptyset d_1$<br>mm | P<br>mm | $\emptyset d_F$<br>mm | $\emptyset d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) |
|-----------------------|---------|-----------------------|-----------------|-------|-------|-------|-------|---------------|
| ≥ M 1,6               | 0,35    | 1,18                  | 3               | 39    | 1,1   | 5,3   | 28    | 3             |
| ≥ M 2                 | 0,4     | 1,52                  | 3               | 39    | 1,2   | 6,6   | 28    | 3             |
| ≥ M 2,5               | 0,45    | 1,95                  | 3               | 39    | 1,4   | 8,2   | 28    | 3             |
| ≥ M 3                 | 0,5     | 2,4                   | 3               | 41    | 1,5   | 9,8   | 28    | 4             |
| ≥ M 4                 | 0,7     | 3,15                  | 4               | 44    | 2,1   | 13,1  | 28    | 4             |
| ≥ M 5                 | 0,8     | 4,04                  | 6               | 57    | 2,4   | 16,2  | 36    | 4             |
| ≥ M 6                 | 1       | 4,8                   | 6               | 60    | 3     | 19,5  | 36    | 4             |
| ≥ M 8                 | 1,25    | 6,5                   | 8               | 67    | 3,8   | 25,9  | 36    | 4             |
| ≥ M10                 | 1,5     | 8,2                   | 10              | 78    | 4,5   | 32,3  | 40    | 5             |
| ≥ M12                 | 1,75    | 9,9                   | 10              | 83    | 5,3   | 38,6  | 40    | 5             |
| ≥ M14                 | 2       | 11,6                  | 12              | 95    | 6     | 45    | 45    | 5             |
| ≥ M16                 | 2       | 13,6                  | 14              | 101   | 6     | 51    | 45    | 6             |
| ≥ M20                 | 2,5     | 17                    | 18              | 120   | 7,5   | 63,8  | 48    | 6             |
| ≥ M24                 | 3       | 19,9                  | 20              | 135   | 9     | 76,5  | 50    | 6             |

VHM  
CarbideTIALN  
T46

RH + LH

LH-rot.

Z3 - Z6

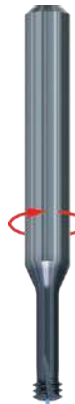
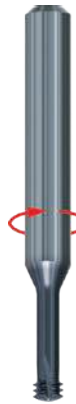
DIN 6535



L10



ZGF-S-CUT



P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

2 x d<sub>1</sub>

| ZGF-S-CUT<br>2xd <sub>1</sub><br>HA<br>TIALN-T46 | ZGF-S-CUT<br>2xd <sub>1</sub><br>IKZ-HA<br>TIALN-T46 | ZGF-S-CUT<br>2xd <sub>1</sub><br>IKZ-HB<br>TIALN-T46 |
|--------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| GF26A729.0016                                    |                                                      |                                                      |
| GF26A729.0020                                    |                                                      |                                                      |
| GF26A729.0025                                    |                                                      |                                                      |
| GF26A729.0030                                    |                                                      |                                                      |
| GF26A729.0040                                    |                                                      |                                                      |
|                                                  | GF26A729.0050                                        | GF26A129.0050                                        |
|                                                  | GF26A729.0060                                        | GF26A129.0060                                        |
|                                                  | GF26A729.0080                                        | GF26A129.0080                                        |
|                                                  | GF26A729.0100                                        | GF26A129.0100                                        |
|                                                  | GF26A729.0112                                        | GF26A129.0112                                        |
|                                                  | GF26A729.0114                                        | GF26A129.0114                                        |
|                                                  | GF26A729.0116                                        | GF26A129.0116                                        |
|                                                  | GF26A729.0120                                        | GF26A129.0120                                        |
|                                                  | GF26A729.0124                                        | GF26A129.0124                                        |

3 x d<sub>1</sub>

| ZGF-S-CUT<br>3xd <sub>1</sub><br>HA<br>TIALN-T46 | ZGF-S-CUT<br>3xd <sub>1</sub><br>IKZ-HA<br>TIALN-T46 | ZGF-S-CUT<br>3xd <sub>1</sub><br>IKZ-HB<br>TIALN-T46 |
|--------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| GF2BA729.0016                                    |                                                      |                                                      |
| GF2BA729.0020                                    |                                                      |                                                      |
| GF2BA729.0025                                    |                                                      |                                                      |
| GF2BA729.0030                                    |                                                      |                                                      |
| GF2BA729.0040                                    |                                                      |                                                      |
|                                                  | GF2BA729.0050                                        | GF2BA129.0050                                        |
|                                                  | GF2BA729.0060                                        | GF2BA129.0060                                        |
|                                                  | GF2BA729.0080                                        | GF2BA129.0080                                        |
|                                                  | GF2BA729.0100                                        | GF2BA129.0100                                        |
|                                                  | GF2BA729.0112                                        | GF2BA129.0112                                        |
|                                                  | GF2BA729.0114                                        | GF2BA129.0114                                        |
|                                                  | GF2BA729.0116                                        | GF2BA129.0116                                        |
|                                                  | GF2BA729.0120                                        | GF2BA129.0120                                        |
|                                                  | GF2BA729.0124                                        | GF2BA129.0124                                        |

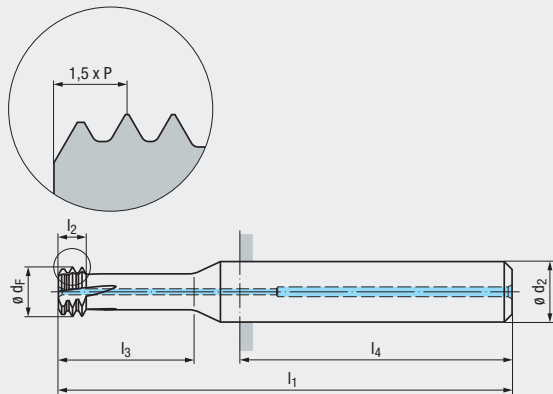
Weitere Ausführungen auf Anfrage  
Further designs upon request

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

# UNC, UNF

ASME B1.1

Für Innengewinde  
For internal threads



VHM  
Carbide

TIALN  
T46

RH + LH

LH-rot.

Z3 - Z5



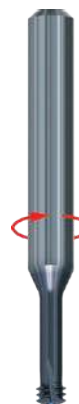
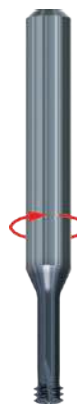
DIN 6535



L10



## ZGF-S-CUT



Einsatzgebiete – Material  
Applications – material

» 358

|   |         |   |         |   |         |
|---|---------|---|---------|---|---------|
| P | 1.1-5.1 | M | 1.1-4.1 | K | 1.1-4.2 |
| N | 1.1-5.3 | S | 1.1-2.6 | H | 1.1-1.2 |

Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

|         | ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | ZGF-S-CUT<br>2xd <sub>1</sub><br>HA<br>TIALN-T46 | ZGF-S-CUT<br>2xd <sub>1</sub><br>IKZ-HA<br>TIALN-T46 | ZGF-S-CUT<br>2xd <sub>1</sub><br>IKZ-HB<br>TIALN-T46 |
|---------|--------------------------|------------------|------------------------|------------------|----------------|----------------|----------------|----------------|---------------|--------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| ≥ Nr. 2 | 56                       | 1,7              | 3                      | 39               | 1,4            | 5,1            | 28             | 3              | 3             | GF26A729.5001                                    |                                                      |                                                      |
| ≥ Nr. 4 | 40                       | 2,15             | 3                      | 39               | 1,9            | 6,6            | 28             | 3              | 3             | GF26A729.5003                                    |                                                      |                                                      |
| ≥ Nr. 6 | 32                       | 2,7              | 3                      | 39               | 2,4            | 8,2            | 28             | 3              | 3             | GF26A729.5005                                    |                                                      |                                                      |
| ≥ Nr. 8 | 32                       | 3,35             | 4                      | 40               | 2,4            | 9,5            | 28             | 3              | 3             | GF26A729.5006                                    |                                                      |                                                      |
| ≥ Nr.10 | 24                       | 3,7              | 4                      | 42               | 3,2            | 11,2           | 28             | 3              | 3             | GF26A729.5007                                    |                                                      |                                                      |
| ≥ 1/4   | 20                       | 4,95             | 6                      | 55               | 3,8            | 14,6           | 36             | 3              | 3             |                                                  | GF26A729.5009                                        | GF26A129.5009                                        |
| ≥ 5/16  | 18                       | 6,3              | 8                      | 58               | 4,2            | 18             | 36             | 4              | 4             |                                                  | GF26A729.5010                                        | GF26A129.5010                                        |
| ≥ 3/8   | 16                       | 7,7              | 8                      | 62               | 4,8            | 21,4           | 36             | 4              | 4             |                                                  | GF26A729.5011                                        | GF26A129.5011                                        |
| ≥ 7/16  | 14                       | 9                | 10                     | 70               | 5,4            | 25             | 40             | 4              | 4             |                                                  | GF26A729.5012                                        | GF26A129.5012                                        |
| ≥ 1/2   | 13                       | 10,4             | 12                     | 80               | 5,9            | 28,3           | 45             | 4              | 4             |                                                  | GF26A729.5013                                        | GF26A129.5013                                        |
| ≥ 9/16  | 12                       | 11,8             | 12                     | 83               | 6,4            | 31,8           | 45             | 4              | 4             |                                                  | GF26A729.5014                                        | GF26A129.5014                                        |
| ≥ 5/8   | 11                       | 13               | 14                     | 88               | 6,9            | 35,2           | 45             | 5              | 5             |                                                  | GF26A729.5015                                        | GF26A129.5015                                        |
| ≥ 3/4   | 10                       | 15,9             | 16                     | 97               | 7,6            | 41,9           | 48             | 5              | 5             |                                                  | GF26A729.5016                                        | GF26A129.5016                                        |



Gewindetiefe  
Thread depth

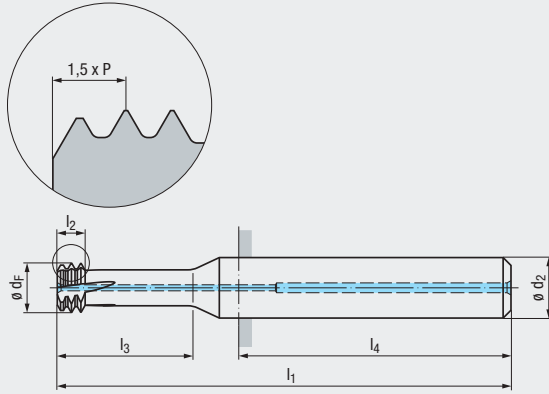
3 x d<sub>1</sub>

|         | ø d <sub>1</sub><br>inch | P<br>Gg/1" (tpi) | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | ZGF-S-CUT<br>3xd <sub>1</sub><br>HA<br>TIALN-T46 | ZGF-S-CUT<br>3xd <sub>1</sub><br>IKZ-HA<br>TIALN-T46 | ZGF-S-CUT<br>3xd <sub>1</sub><br>IKZ-HB<br>TIALN-T46 |
|---------|--------------------------|------------------|------------------------|------------------|----------------|----------------|----------------|----------------|---------------|--------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| ≥ Nr. 2 | 56                       | 1,7              | 3                      | 39               | 1,4            | 7,2            | 28             | 3              | 3             | GF2BA729.5001                                    |                                                      |                                                      |
| ≥ Nr. 4 | 40                       | 2,15             | 3                      | 41               | 1,9            | 9,5            | 28             | 3              | 3             | GF2BA729.5003                                    |                                                      |                                                      |
| ≥ Nr. 6 | 32                       | 2,7              | 3                      | 43               | 2,4            | 11,7           | 28             | 3              | 3             | GF2BA729.5005                                    |                                                      |                                                      |
| ≥ Nr. 8 | 32                       | 3,35             | 4                      | 45               | 2,4            | 13,7           | 28             | 3              | 3             | GF2BA729.5006                                    |                                                      |                                                      |
| ≥ Nr.10 | 24                       | 3,7              | 4                      | 48               | 3,2            | 16,1           | 28             | 3              | 3             | GF2BA729.5007                                    |                                                      |                                                      |
| ≥ 1/4   | 20                       | 4,95             | 6                      | 61               | 3,8            | 21             | 36             | 3              | 3             |                                                  | GF2BA729.5009                                        | GF2BA129.5009                                        |
| ≥ 5/16  | 18                       | 6,3              | 8                      | 67               | 4,2            | 25,9           | 36             | 4              | 4             |                                                  | GF2BA729.5010                                        | GF2BA129.5010                                        |
| ≥ 3/8   | 16                       | 7,7              | 8                      | 71               | 4,8            | 31             | 36             | 4              | 4             |                                                  | GF2BA729.5011                                        | GF2BA129.5011                                        |
| ≥ 7/16  | 14                       | 9                | 10                     | 81               | 5,4            | 36,1           | 40             | 4              | 4             |                                                  | GF2BA729.5012                                        | GF2BA129.5012                                        |
| ≥ 1/2   | 13                       | 10,4             | 12                     | 92               | 5,9            | 41             | 45             | 4              | 4             |                                                  | GF2BA729.5013                                        | GF2BA129.5013                                        |
| ≥ 9/16  | 12                       | 11,8             | 12                     | 96               | 6,4            | 46             | 45             | 4              | 4             |                                                  | GF2BA729.5014                                        | GF2BA129.5014                                        |
| ≥ 5/8   | 11                       | 13               | 14                     | 102              | 6,9            | 51,1           | 45             | 5              | 5             |                                                  | GF2BA729.5015                                        | GF2BA129.5015                                        |
| ≥ 3/4   | 10                       | 15,9             | 16                     | 115              | 7,6            | 61             | 48             | 5              | 5             |                                                  | GF2BA729.5016                                        | GF2BA129.5016                                        |

Weitere Ausführungen auf Anfrage  
Further designs upon request

**UNF**

ASME B1.1

Für Innengewinde  
For internal threadsEinsatzgebiete – Material  
Applications – material

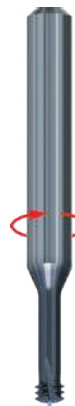
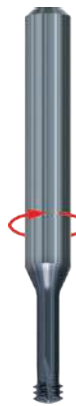
» 358

Gewindetiefe  
Thread depth

| $\varnothing d_1$<br>inch | P<br>Gg/1" (tpi) | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) |
|---------------------------|------------------|-------------------------|-------------------|-------|-------|-------|-------|---------------|
| ≥ Nr. 2                   | 64               | 1,76                    | 3                 | 39    | 1,2   | 5     | 28    | 4             |
| ≥ Nr. 4                   | 48               | 2,27                    | 3                 | 39    | 1,6   | 6,5   | 28    | 3             |
| ≥ Nr. 6                   | 40               | 2,79                    | 3                 | 39    | 1,9   | 8     | 28    | 4             |
| ≥ Nr. 8                   | 36               | 3,34                    | 4                 | 42    | 2,1   | 9,4   | 28    | 4             |
| ≥ Nr.10                   | 32               | 3,9                     | 4                 | 42    | 2,4   | 10,8  | 28    | 4             |
| ≥ 1/4                     | 28               | 5,25                    | 6                 | 55    | 2,7   | 14,1  | 36    | 5             |
| ≥ 5/16                    | 24               | 6,6                     | 8                 | 58    | 3,2   | 17,5  | 36    | 5             |
| ≥ 3/8                     | 24               | 8,2                     | 10                | 67    | 3,2   | 20,6  | 40    | 6             |
| ≥ 7/16                    | 20               | 9,55                    | 10                | 74    | 3,8   | 24,1  | 40    | 6             |
| ≥ 1/2                     | 20               | 11,1                    | 12                | 78    | 3,8   | 27,3  | 45    | 7             |
| ≥ 9/16                    | 18               | 12,5                    | 14                | 80    | 4,2   | 30,7  | 45    | 7             |
| ≥ 5/8                     | 18               | 13,9                    | 14                | 85    | 4,2   | 33,9  | 45    | 8             |
| ≥ 3/4                     | 16               | 17                      | 18                | 95    | 4,8   | 40,5  | 48    | 9             |

Gewindetiefe  
Thread depth

| $\varnothing d_1$<br>inch | P<br>Gg/1" (tpi) | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) |
|---------------------------|------------------|-------------------------|-------------------|-------|-------|-------|-------|---------------|
| ≥ Nr. 2                   | 64               | 1,76                    | 3                 | 39    | 1,2   | 7,2   | 28    | 4             |
| ≥ Nr. 4                   | 48               | 2,27                    | 3                 | 39    | 1,6   | 9,3   | 28    | 3             |
| ≥ Nr. 6                   | 40               | 2,79                    | 3                 | 42    | 1,9   | 11,5  | 28    | 4             |
| ≥ Nr. 8                   | 36               | 3,34                    | 4                 | 45    | 2,1   | 13,6  | 28    | 4             |
| ≥ Nr.10                   | 32               | 3,9                     | 4                 | 46    | 2,4   | 15,7  | 28    | 4             |
| ≥ 1/4                     | 28               | 5,25                    | 6                 | 60    | 2,7   | 20,4  | 36    | 5             |
| ≥ 5/16                    | 24               | 6,6                     | 8                 | 66    | 3,2   | 25,4  | 36    | 5             |
| ≥ 3/8                     | 24               | 8,2                     | 10                | 75    | 3,2   | 30,2  | 40    | 6             |
| ≥ 7/16                    | 20               | 9,55                    | 10                | 79    | 3,8   | 35,2  | 40    | 6             |
| ≥ 1/2                     | 20               | 11,1                    | 12                | 90    | 3,8   | 40    | 45    | 7             |
| ≥ 9/16                    | 18               | 12,5                    | 14                | 95    | 4,2   | 45    | 45    | 7             |
| ≥ 5/8                     | 18               | 13,9                    | 14                | 100   | 4,2   | 49,7  | 45    | 8             |
| ≥ 3/4                     | 16               | 17                      | 18                | 115   | 4,8   | 59,5  | 48    | 9             |

**VHM**  
Carbide**TIALN**  
T46**RH + LH****LH-rot.****Z3 - Z9****DIN 6535****L10****ZGF-S-CUT**

**P** 1.1-5.1 **M** 1.1-4.1 **K** 1.1-4.2  
**N** 1.1-5.3 **S** 1.1-2.6 **H** 1.1-1.2

**2 x d<sub>1</sub>**

| ZGF-S-CUT<br>2xd <sub>1</sub><br>HA<br>TIALN-T46 | ZGF-S-CUT<br>2xd <sub>1</sub><br>IKZ-HA<br>TIALN-T46 | ZGF-S-CUT<br>2xd <sub>1</sub><br>IKZ-HB<br>TIALN-T46 |
|--------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| GF26A729.5035                                    |                                                      |                                                      |
| GF26A729.5037                                    |                                                      |                                                      |
| GF26A729.5039                                    |                                                      |                                                      |
| GF26A729.5040                                    |                                                      |                                                      |
| GF26A729.5041                                    |                                                      |                                                      |
|                                                  | GF26A729.5043                                        | GF26A129.5043                                        |
|                                                  | GF26A729.5044                                        | GF26A129.5044                                        |
|                                                  | GF26A729.5045                                        | GF26A129.5045                                        |
|                                                  | GF26A729.5046                                        | GF26A129.5046                                        |
|                                                  | GF26A729.5047                                        | GF26A129.5047                                        |
|                                                  | GF26A729.5048                                        | GF26A129.5048                                        |
|                                                  | GF26A729.5049                                        | GF26A129.5049                                        |
|                                                  | GF26A729.5050                                        | GF26A129.5050                                        |

**3 x d<sub>1</sub>**

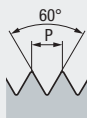
| ZGF-S-CUT<br>3xd <sub>1</sub><br>HA<br>TIALN-T46 | ZGF-S-CUT<br>3xd <sub>1</sub><br>IKZ-HA<br>TIALN-T46 | ZGF-S-CUT<br>3xd <sub>1</sub><br>IKZ-HB<br>TIALN-T46 |
|--------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| GF2BA729.5035                                    |                                                      |                                                      |
| GF2BA729.5037                                    |                                                      |                                                      |
| GF2BA729.5039                                    |                                                      |                                                      |
| GF2BA729.5040                                    |                                                      |                                                      |
| GF2BA729.5041                                    |                                                      |                                                      |
|                                                  | GF2BA729.5043                                        | GF2BA129.5043                                        |
|                                                  | GF2BA729.5044                                        | GF2BA129.5044                                        |
|                                                  | GF2BA729.5045                                        | GF2BA129.5045                                        |
|                                                  | GF2BA729.5046                                        | GF2BA129.5046                                        |
|                                                  | GF2BA729.5047                                        | GF2BA129.5047                                        |
|                                                  | GF2BA729.5048                                        | GF2BA129.5048                                        |
|                                                  | GF2BA729.5049                                        | GF2BA129.5049                                        |
|                                                  | GF2BA729.5050                                        | GF2BA129.5050                                        |

Weitere Ausführungen auf Anfrage  
Further designs upon request

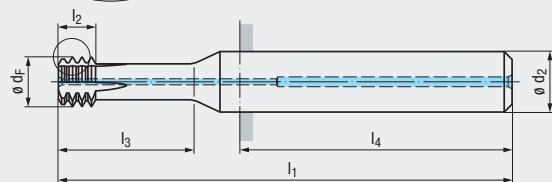
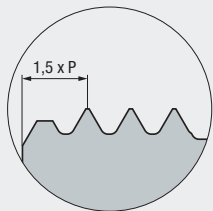
|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |

# M, MF

DIN 13



Für Innengewinde  
For internal threads



VHM  
Carbide

TIALN  
T46

RH + LH

LH-rot.

Z4 - Z6



DIN 6535



ZGF-HCUT



Einsatzgebiete – Material  
Applications – material

» 358

N 2.7-2.8

H 1.1-1.5

Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

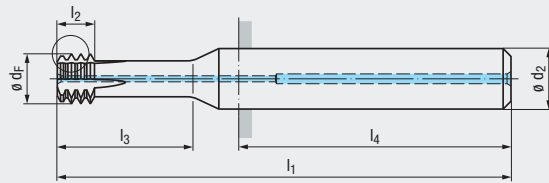
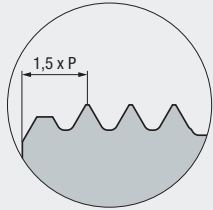
|       | ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Flutes) | ZGF-HCUT<br>2xd <sub>1</sub><br>HA<br>TIALN-T46 | ZGF-HCUT<br>2xd <sub>1</sub><br>IKZ-HA<br>TIALN-T46 | ZGF-HCUT<br>2xd <sub>1</sub><br>IKZ-HB<br>TIALN-T46 |
|-------|------------------------|---------|------------------------|------------------|----------------|----------------|----------------|----------------|---------------|-------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| ≥ M 3 | 0,5                    | 2,4     | 6                      | 51               | 2              | 6,8            | 36             | 4              |               | GF283729.0030                                   |                                                     |                                                     |
| ≥ M 4 | 0,7                    | 3,15    | 6                      | 51               | 2,8            | 9,1            | 36             | 4              |               | GF283729.0040                                   |                                                     |                                                     |
| ≥ M 5 | 0,8                    | 4,04    | 6                      | 52               | 3,2            | 11,2           | 36             | 4              |               |                                                 | GF283729.0050                                       | GF283129.0050                                       |
| ≥ M 6 | 1                      | 4,8     | 6                      | 55               | 3,9            | 13,3           | 36             | 4              |               |                                                 | GF283729.0060                                       | GF283129.0060                                       |
| ≥ M 8 | 1,25                   | 6,5     | 8                      | 60               | 4,9            | 17,9           | 36             | 4              |               |                                                 | GF283729.0080                                       | GF283129.0080                                       |
| ≥ M10 | 1,5                    | 8,2     | 10                     | 70               | 5,9            | 22,3           | 40             | 5              |               |                                                 | GF283729.0100                                       | GF283129.0100                                       |
| ≥ M12 | 1,75                   | 9,9     | 10                     | 74               | 6,8            | 26,6           | 40             | 5              |               |                                                 | GF283729.0112                                       | GF283129.0112                                       |
| ≥ M14 | 2                      | 11,6    | 12                     | 85               | 7,8            | 31             | 45             | 5              |               |                                                 | GF283729.0114                                       | GF283129.0114                                       |
| ≥ M16 | 2                      | 13,6    | 14                     | 90               | 7,8            | 35             | 45             | 5              |               |                                                 | GF283729.0116                                       | GF283129.0116                                       |
| ≥ M20 | 2,5                    | 17      | 18                     | 102              | 9,7            | 43,8           | 48             | 6              |               |                                                 | GF283729.0120                                       | GF283129.0120                                       |

Weitere Ausführungen auf Anfrage  
Further designs upon request



# UNC, UNF

ASME B1.1

Für Innengewinde  
For internal threadsEinsatzgebiete – Material  
Applications – material

» 358

Gewindetiefe  
Thread depthVHM  
CarbideTIALN  
T46

RH + LH

LH-rot.

Z3 - Z5

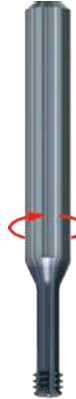
DIN 6535



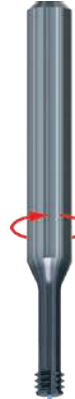
ZGF-HCUT



new



new



new



N 2.7-2.8

H 1.1-1.5

2 x d<sub>1</sub>

| $\phi d_1$<br>inch | P<br>Gg/1" (tpi) | $\phi d_F$<br>mm | $\phi d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) | ZGF-HCUT<br>2xd <sub>1</sub><br>HA<br>TIALN-T46 | ZGF-HCUT<br>2xd <sub>1</sub><br>IKZ-HA<br>TIALN-T46 | ZGF-HCUT<br>2xd <sub>1</sub><br>IKZ-HB<br>TIALN-T46 |
|--------------------|------------------|------------------|------------|-------|-------|-------|-------|---------------|-------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| ≥ Nr. 2            | 56               | 1,7              | 3          | 39    | 1,8   | 5,1   | 28    | 3             | GF283729.5001                                   |                                                     |                                                     |
| ≥ Nr. 4            | 40               | 2,15             | 3          | 39    | 2,5   | 6,6   | 28    | 3             | GF283729.5003                                   |                                                     |                                                     |
| ≥ Nr. 6            | 32               | 2,7              | 3          | 39    | 3,1   | 8,2   | 28    | 3             | GF283729.5005                                   |                                                     |                                                     |
| ≥ Nr. 8            | 32               | 3,21             | 4          | 42    | 3,1   | 9,5   | 28    | 3             | GF283729.5006                                   |                                                     |                                                     |
| ≥ Nr.10            | 24               | 3,7              | 4          | 42    | 4,1   | 11,2  | 28    | 3             | GF283729.5007                                   |                                                     |                                                     |
| ≥ 1/4              | 20               | 4,95             | 6          | 55    | 5     | 14,6  | 36    | 3             |                                                 | GF283729.5009                                       | GF283129.5009                                       |
| ≥ 5/16             | 18               | 6,3              | 8          | 58    | 5,5   | 18    | 36    | 4             |                                                 | GF283729.5010                                       | GF283129.5010                                       |
| ≥ 3/8              | 16               | 7,65             | 8          | 62    | 6,2   | 21,4  | 36    | 4             |                                                 | GF283729.5011                                       | GF283129.5011                                       |
| ≥ 7/16             | 14               | 9                | 10         | 70    | 7,1   | 25    | 40    | 4             |                                                 | GF283729.5012                                       | GF283129.5012                                       |
| ≥ 1/2              | 13               | 10,4             | 12         | 80    | 7,6   | 28,3  | 45    | 4             |                                                 | GF283729.5013                                       | GF283129.5013                                       |
| ≥ 9/16             | 12               | 11,8             | 12         | 82    | 8,2   | 31,8  | 45    | 4             |                                                 | GF283729.5014                                       | GF283129.5014                                       |
| ≥ 5/8              | 11               | 13               | 14         | 87    | 9     | 35,2  | 45    | 5             |                                                 | GF283729.5015                                       | GF283129.5015                                       |
| ≥ 3/4              | 10               | 15,9             | 16         | 95    | 9,9   | 41,9  | 48    | 5             |                                                 | GF283729.5016                                       | GF283129.5016                                       |

Weitere Ausführungen auf Anfrage  
Further designs upon requestProduct  
Finderv<sub>c</sub> / f<sub>z</sub>

M

MF

UNC  
UN, UNSUNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys

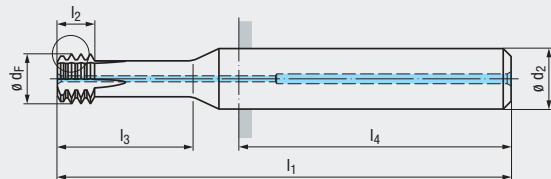
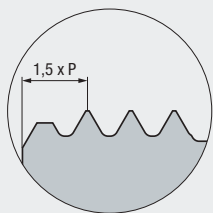


|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |



ASME B1.1

Für Innengewinde  
For internal threads



|                |                      |
|----------------|----------------------|
| VHM<br>Carbide | TIALN<br>T46         |
| RH + LH        | LH-rot.              |
| Z3 - Z8        | DIN 6535<br>HA<br>HB |
|                |                      |
|                |                      |

| ZGF-HCUT |  |  |
|----------|--|--|
|          |  |  |
|          |  |  |

Einsatzgebiete – Material  
Applications – material

» 358

N 2.7-2.8

H 1.1-1.5

Gewindetiefe  
Thread depth

2 x d<sub>1</sub>

|         | $\phi d_1$<br>inch | P<br>Gg/1" (tpi) | $\phi d_F$<br>mm | $\phi d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Flutes) | ZGF-HCUT<br>2xd <sub>1</sub><br>HA<br>TIALN-T46 | ZGF-HCUT<br>2xd <sub>1</sub><br>IKZ-HA<br>TIALN-T46 | ZGF-HCUT<br>2xd <sub>1</sub><br>IKZ-HB<br>TIALN-T46 |
|---------|--------------------|------------------|------------------|------------|-------|-------|-------|-------|---------------|-------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| ≥ Nr. 2 | 64                 | 1,76             | 3                | 39         | 1,6   | 5     | 28    | 3     | 3             | GF283729.5035                                   |                                                     |                                                     |
| ≥ Nr. 4 | 48                 | 2,27             | 3                | 39         | 2,1   | 6,5   | 28    | 3     | 3             | GF283729.5037                                   |                                                     |                                                     |
| ≥ Nr. 6 | 40                 | 2,79             | 3                | 39         | 2,5   | 8     | 28    | 3     | 3             | GF283729.5039                                   |                                                     |                                                     |
| ≥ Nr. 8 | 36                 | 3,34             | 4                | 42         | 2,8   | 9,4   | 28    | 4     | 4             | GF283729.5040                                   |                                                     |                                                     |
| ≥ Nr.10 | 32                 | 3,9              | 4                | 42         | 3,1   | 10,8  | 28    | 4     | 4             | GF283729.5041                                   |                                                     |                                                     |
| ≥ 1/4   | 28                 | 5,25             | 6                | 55         | 3,6   | 14,1  | 36    | 5     | 5             |                                                 | GF283729.5043                                       | GF283129.5043                                       |
| ≥ 5/16  | 24                 | 6,6              | 8                | 58         | 4,1   | 17,5  | 36    | 5     | 5             |                                                 | GF283729.5044                                       | GF283129.5044                                       |
| ≥ 3/8   | 24                 | 7,9              | 8                | 60         | 4,1   | 20,6  | 36    | 6     | 6             |                                                 | GF283729.5045                                       | GF283129.5045                                       |
| ≥ 7/16  | 20                 | 9,55             | 10               | 70         | 5     | 24,1  | 40    | 6     | 6             |                                                 | GF283729.5046                                       | GF283129.5046                                       |
| ≥ 1/2   | 20                 | 11,1             | 12               | 78         | 5     | 27,3  | 45    | 7     | 7             |                                                 | GF283729.5047                                       | GF283129.5047                                       |
| ≥ 9/16  | 18                 | 12,5             | 14               | 82         | 5,5   | 30,7  | 45    | 7     | 7             |                                                 | GF283729.5048                                       | GF283129.5048                                       |
| ≥ 5/8   | 18                 | 13,9             | 14               | 85         | 5,5   | 33,9  | 45    | 8     | 8             |                                                 | GF283729.5049                                       | GF283129.5049                                       |
| ≥ 3/4   | 16                 | 17               | 18               | 95         | 6,2   | 40,5  | 48    | 8     | 8             |                                                 | GF283729.5050                                       | GF283129.5050                                       |

Weitere Ausführungen auf Anfrage  
Further designs upon request

Product  
Finder $v_c / f_z$ 

M

MF

UNC  
UN, UNSUNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

**ZIRK-GF**

Gigant

MoSys

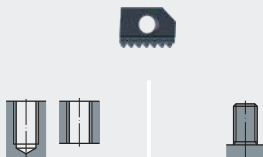
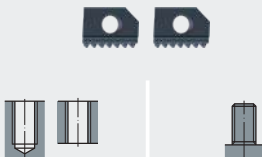
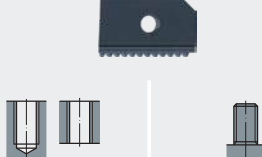


| Product Finder         |
|------------------------|
| $V_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

| ZIRK-GF                                                                                | ZIRK-GF                                                                                  | ZIRK-GF                                                                                |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Für eine Mehrzahn-Wechselplatte 15 mm<br>For one multi-tooth exchangeable insert 15 mm | Für zwei Mehrzahn-Wechselplatten 15 mm<br>For two multi-tooth exchangeable inserts 15 mm | Für eine Mehrzahn-Wechselplatte 26 mm<br>For one multi-tooth exchangeable insert 26 mm |
|       |        |     |

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|-----|-----|-----|
| 482 | 482 | 484 |
|-----|-----|-----|

|                                                                                   |                                                                                    |                                                                                     |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|

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|                             |     |     |     |     |     |     |
|-----------------------------|-----|-----|-----|-----|-----|-----|
| <b>M</b>                    | 483 |     | 483 |     | 485 |     |
| <b>MF</b>                   | 483 |     | 483 |     | 485 |     |
| <b>UN</b>                   | 483 |     | 483 |     |     |     |
| <b>G (BSP), BSW, BSF, W</b> | 483 | 483 | 483 | 483 | 485 | 485 |
| <b>NPT</b>                  |     |     |     |     |     |     |

GF-VZ

GF-KEG

ZGF

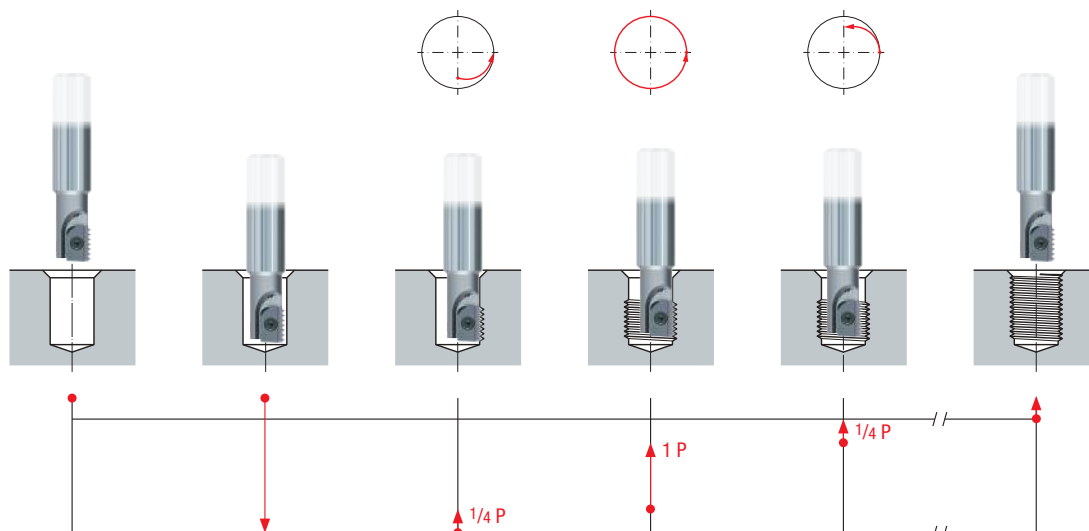
**ZIRK-GF**

Gigant

MoSys



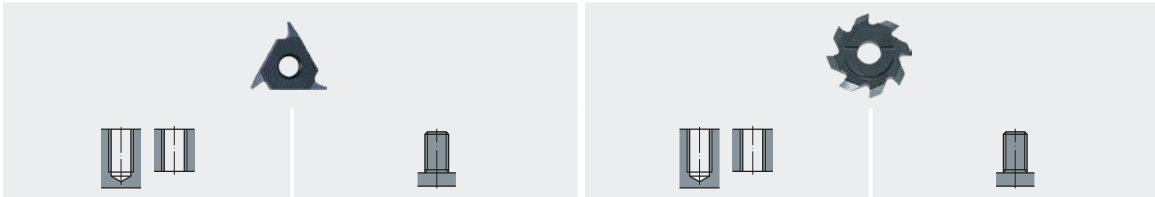
### Gewindefräszyklus · Thread milling cycle





Seite · Page

|     |     |
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| 486 | 488 |
|-----|-----|

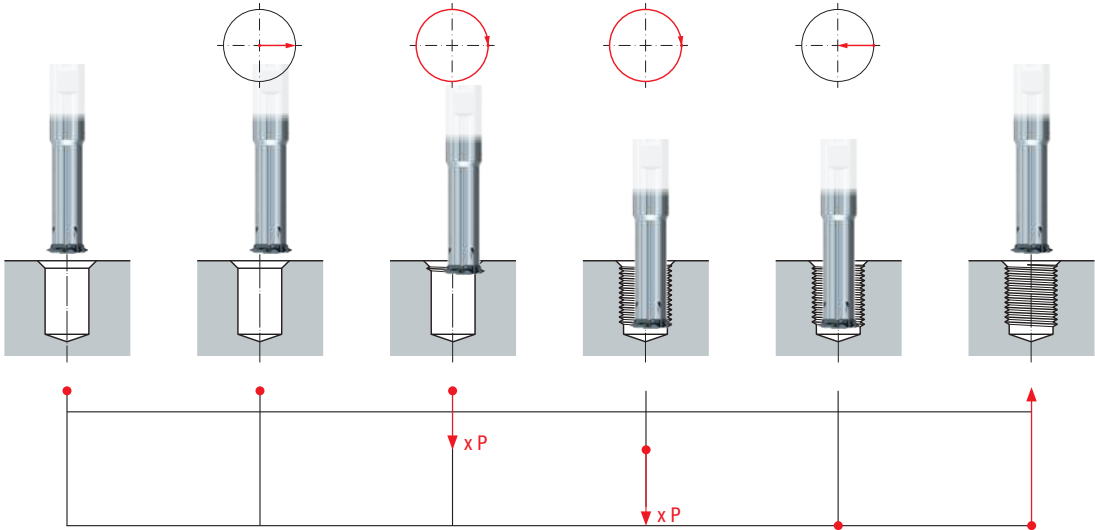


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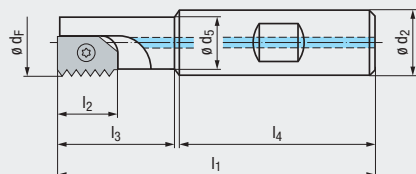
|     |     |     |     |                             |
|-----|-----|-----|-----|-----------------------------|
| 487 |     | 489 | 489 | <b>M</b>                    |
| 487 |     | 489 | 489 | <b>MF</b>                   |
| 487 |     | 489 | 489 | <b>UN</b>                   |
| 487 | 487 | 489 | 489 | <b>G (BSP), BSW, BSF, W</b> |
|     |     | 490 |     | <b>NPT</b>                  |

| Product Finder         |
|------------------------|
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| <b>ZIRK-GF</b>         |
| Gigant                 |
| MoSys                  |

Gewindefräszyklus · Thread milling cycle



Für eine Mehrzahn-Wechselplatte 15 mm  
For one multi-tooth exchangeable insert 15 mm



DIN 1835



ZIRK-GF



Kurze Ausführung · Short design

| P<br>mm   | P<br>Gg/1" (tpi) | $\varnothing d_1$<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_5$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Inserts) |
|-----------|------------------|-------------------------|-------------------------|-------------------|-------------------|-------|-------|-------|-------|----------------|
| 0,5 - 2,5 | 20 - 11          | $\geq 21,3$             | 16                      | 16                | 13                | 78    | 15    | 28,5  | 48    | 1              |

ZIRK-GF  
MZF-15mm-Z1  
IKZN

GZ301110

Lange Ausführung · Long design

| P<br>mm               | P<br>Gg/1" (tpi) | $\varnothing d_1$<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_5$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Inserts) |
|-----------------------|------------------|-------------------------|-------------------------|-------------------|-------------------|-------|-------|-------|-------|----------------|
| 0,5 - 2,5             | 20 - 11          | $\geq 21,3$             | 16                      | 16                | 13                | 98    | 15    | 48,5  | 48    | 1              |
| 0,5 - 2,5             | 20 - 11          | $\geq 27$               | 20                      | 20                | 17                | 110   | 15    | 58,5  | 50    | 1              |
| 3 - 3,5 <sup>1)</sup> | —                | $\geq 29,3$             | 22                      | 20                | 17                | 110   | 15    | 58,5  | 50    | 1              |

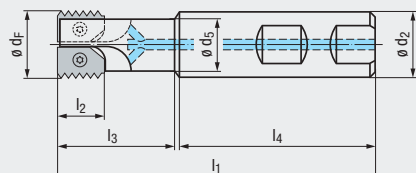
ZIRK-GF  
MZF-15mm-Z1  
IKZN

GZ301310<sup>2)</sup>

GZ301320

GZ301340

Für zwei Mehrzahn-Wechselplatten 15 mm  
For two multi-tooth exchangeable inserts 15 mm



DIN 1835



ZIRK-GF



Kurze Ausführung · Short design

| P<br>mm               | P<br>Gg/1" (tpi) | $\varnothing d_1$<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_5$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Inserts) |
|-----------------------|------------------|-------------------------|-------------------------|-------------------|-------------------|-------|-------|-------|-------|----------------|
| 0,5 - 2,5             | 20 - 11          | $\geq 33,3$             | 25                      | 25                | 21                | 106   | 15    | 48    | 56    | 2              |
| 3 - 3,5 <sup>1)</sup> | —                | $\geq 36$               | 27                      | 25                | 21                | 106   | 15    | 48    | 56    | 2              |

ZIRK-GF  
MZF-15mm-Z2  
IKZN

GZ301130

GZ301140

Lange Ausführung · Long design

| P<br>mm   | P<br>Gg/1" (tpi) | $\varnothing d_1$<br>mm | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_5$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Inserts) |
|-----------|------------------|-------------------------|-------------------------|-------------------|-------------------|-------|-------|-------|-------|----------------|
| 0,5 - 2,5 | 20 - 11          | $\geq 33,3$             | 25                      | 25                | 21                | 150   | 15    | 92    | 56    | 2              |

ZIRK-GF  
MZF-15mm-Z2  
IKZN

GZ301330<sup>2)</sup>

Lieferumfang: ohne Mehrzahn-Wechselplatten, mit Spannschrauben  
Delivery: without multi-tooth exchangeable inserts, with clamping screws

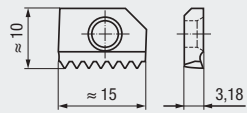
**Achtung:** Beim Anziehen der Spannschraube ist das **empfohlene Anzugsdrehmoment von 3,0 Nm** zu beachten  
**Note:** When tightening the clamping screw, the **recommended tightening torque 3.0 Nm** must be used

<sup>1)</sup> Verstärkte Ausführung  
Reinforced design

<sup>2)</sup> Aus Schwermetall, schwingungsgedämpft  
Of vibration-absorbing heavy metal

# Mehrzahn-Wechselplatten 15 mm

## Multi-tooth exchangeable inserts 15 mm

HM  
CarbideTIALN  
T4

RH + LH

ZIRK-GF

Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1

M 1.1-4.1

K 1.1-4.2

N 1.1-5.3

S 1.1-2.6

H 1.1-1.2

Product  
Finder $v_c / f_z$ 

M

MF

UNC

UN, UNS

UNF

UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör

Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys

# M, MF

DIN 13

Für Innengewinde  
For internal threadsP  
mm

0,5

0,75

1

1,25

1,5

1,75

2

2,5

3 1)

3,5 1)

MZP  
15 mm  
TIALN-T4

GF603117.9506

GF603117.9509

GF603117.9512

GF603117.9513

GF603117.9514

GF603117.9515

GF603117.9516

GF603117.9517

GF603117.9518

GF603117.9519

# UN

ASME B1.1

Für Innengewinde  
For internal threadsP  
Gg/1" (tpi)

20

16

14

12

MZP  
15 mm  
TIALN-T4

GF603117.9580

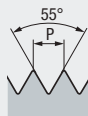
GF603117.9582

GF603117.9583

GF603117.9585

# G (BSP), BSW, BSF, W

DIN EN ISO 228, BS 84

Für Innen- und Außengewinde  
For internal and external threadsP  
Gg/1" (tpi)

16

14

11

MZP  
15 mm  
TIALN-T4

GF603117.9547

GF603117.9548

GF603117.9550

1) Verstärkte Ausführung  
Reinforced designErsatzschraube M4 x 7; Torx T15  
Spare screw M4 x 7; Torx T15

GZ309010

Schraubendreher Torx T15  
Screw driver Torx T15

GZ309020

Drehmoment-Schraubendreher Torx T15  
Torque screw driver Torx T15

GZ349043

|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

**DIN 1835**



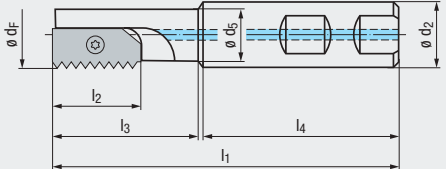
$\emptyset d_1$



$\emptyset d_1$



Für eine Mehrzahn-Wechselplatte 26 mm  
For one multi-tooth exchangeable insert 26 mm



**ZIRK-GF**




| Kurze Ausführung · Short design |                  |                       |                       |                 |                 |       |       |       |       |                | ZIRK-GF<br>MZP-26mm-Z1<br>IKZN |  |
|---------------------------------|------------------|-----------------------|-----------------------|-----------------|-----------------|-------|-------|-------|-------|----------------|--------------------------------|--|
| P<br>mm                         | P<br>Gg/1" (tpi) | $\emptyset d_1$<br>mm | $\emptyset d_F$<br>mm | $\emptyset d_2$ | $\emptyset d_5$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | Z<br>(Inserts) | GZ303010                       |  |
| 1 - 4                           | 14 - 11          | $\geq 33,3$           | 25                    | 25              | 20              | 107   | 26    | 45,5  | 56    | 1              |                                |  |

Lieferumfang: ohne Mehrzahn-Wechselplatten, mit Spannschrauben  
Delivery: without multi-tooth exchangeable inserts, with clamping screws

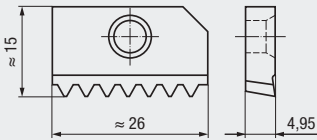
**Achtung:** Beim Anziehen der Spannschraube ist das **empfohlene Anzugsdrehmoment** von **3,0 Nm** zu beachten  
**Note:** When tightening the clamping screw, the **recommended tightening torque 3.0 Nm** must be used

|                |
|----------------|
| BGF            |
| ZBGF           |
| GSF            |
| GF             |
| GF-VZ          |
| GF-KEG         |
| ZGF            |
| <b>ZIRK-GF</b> |
| Gigant         |
| MoSys          |





Mehrzahn-Wechselplatten 26 mm  
Multi-tooth exchangeable inserts 26 mm



HM  
Carbide

TIALN  
T4

RH + LH

ZIRK-GF

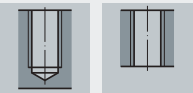


Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1  
M 1.1-4.1  
K 1.1-4.2  
N 1.1-5.3  
S 1.1-2.6  
H 1.1-1.2

M, MF  
DIN 13



Für Innengewinde  
For internal threads



P  
mm

1  
1,5  
2  
2,5  
3  
3,5  
4

MZP  
26 mm  
TIALN-T4

GF603147.9512  
GF603147.9514  
GF603147.9516  
GF603147.9517  
GF603147.9518  
GF603147.9519  
GF603147.9520

G (BSP), BSW, BSF, W  
DIN EN ISO 228, BS 84



Für Innen- und Außengewinde  
For internal and external threads



P  
Gg/1" (tpi)

14  
11

MZP  
26 mm  
TIALN-T4

GF603147.9548  
GF603147.9550



Ersatzschraube M4 x 13; Torx T15  
Spare screw M4 x 13; Torx T15

GZ309210



Schraubendreher Torx T15  
Screw driver Torx T15

GZ309020



Drehmoment-Schraubendreher Torx T15  
Torque screw driver Torx T15

GZ349043



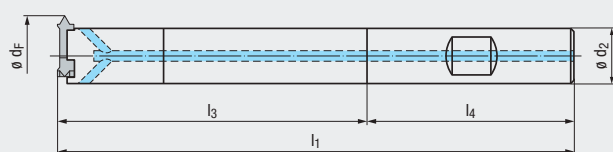
|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| <b>ZIRK-GF</b>         |
| Gigant                 |
| MoSys                  |

|                                                                                   |                                                                                    |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| HM<br>Carbide                                                                     | DIN 6535<br>HB                                                                     |
|  |  |
|  |  |

### ZIRK-GF



Für 3-Zahn-Wechselplatte  
For 3-tooth exchangeable insert



#### Kurze Ausführung · Short design

| P<br>mm | P<br>Gg/1" (tpi) | $\emptyset d_2$ | $l_1$ | $l_3$ | $l_4$ | Z<br>(teeth) |
|---------|------------------|-----------------|-------|-------|-------|--------------|
| 1 - 3,5 | 24 - 7           | 12              | 112   | 67    | 45    | 3            |

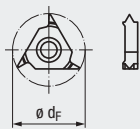
ZIRK-GF  
3ZP  
IKZN  
**GZ311330**

Lieferumfang: ohne 3-Zahn-Wechselplatte, mit Spannschraube  
Delivery: without 3-tooth exchangeable insert, with clamping screw

**Achtung:** Beim Anziehen der Spannschraube ist das **empfohlene Anzugsdrehmoment** von **3,0 Nm** zu beachten  
**Note:** When tightening the clamping screw, the **recommended tightening torque 3.0 Nm** must be used

### 3-Zahn-Wechselplatten

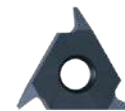
### 3-tooth exchangeable inserts

HM  
CarbideTIALN  
T4

RH + LH



ZIRK-GF

Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1

M 1.1-4.1

K 1.1-4.2

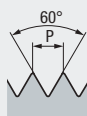
N 1.1-5.3

S 1.1-2.6

H 1.1-1.2

## M, MF, UN

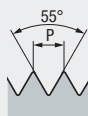
DIN 13, ASME B1.1

Für Innengewinde  
For internal threads

| P<br>mm | P<br>Gg/1" (tpi) | $\varnothing d_1$<br>mm | $\varnothing d_F$<br>mm | Z<br>(teeth) | 3ZP<br>TIALN-T4 |
|---------|------------------|-------------------------|-------------------------|--------------|-----------------|
| 1 - 3,5 | 24 - 7           | $\geq 24$               | 17,5                    | 3            | GF613127.9512   |
| 3       | —                | $\geq 24$               | 17,5                    | 3            | GF613127.9518   |
| 2,5     | —                | M20                     | 16                      | 3            | GF613127.0120   |

## G (BSP), BSW, BSF, W

DIN EN ISO 228, BS 84

Für Innen- und Außengewinde  
For internal and external threads

| P<br>Gg/1" (tpi) | $\varnothing d_1$<br>mm | $\varnothing d_F$<br>mm | Z<br>(teeth) | 3ZP<br>TIALN-T4 |
|------------------|-------------------------|-------------------------|--------------|-----------------|
| 14               | $\geq 24$               | 17,5                    | 3            | GF613127.9548   |
| 11               | $\geq 24$               | 17,5                    | 3            | GF613127.9550   |

Ersatzschraube M4 x 11; Torx T15  
Spare screw M4 x 11; Torx T15

GZ319020

Schraubendreher Torx T15  
Screw driver Torx T15

GZ319060

Drehmoment-Schraubendreher Torx T15  
Torque screw driver Torx T15

GZ349043



DIN 1835

 B

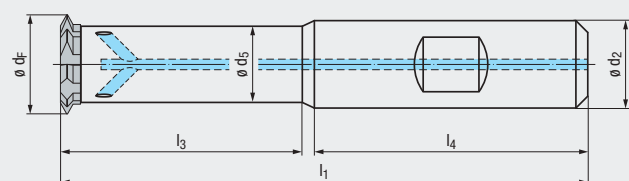
$\varnothing d_1$

$\varnothing d_1$

ZIRK-GF



Für Stirn-Wechselplatte  
For exchangeable face insert



Max. nutzbare Gewindetiefe  $l_3$   
Max. usable thread depth  $l_3$

**2 x  $d_1$**

Empf. Anzugsdrehmoment  
Rec. tightening torque

ZIRK-GF  
SWP  
2x $d_1$   
IKZN

| Größe<br>Size | P<br>mm   | P<br>Gg/1" (tpi) | $\varnothing d_1$<br>mm | $\varnothing d_2$ | $\varnothing d_5$ | $l_1$ | $l_3$ | $l_4$ | Z<br>(teeth) | [Nm] |          |
|---------------|-----------|------------------|-------------------------|-------------------|-------------------|-------|-------|-------|--------------|------|----------|
| A             | 1 - 2     | 24 - 12          | $\geq 12$               | 10                | 7,2               | 68    | 24    | 40    | 6            | 0,9  | GZ38100A |
| B             | 1 - 2,5   | 24 - 10          | $\geq 14$               | 10                | 8,6               | 71,5  | 28    | 40    | 7            | 1,4  | GZ38100B |
| G             | 1 - 2,5   | 24 - 10          | $\geq 16$               | 12                | 10,5              | 80,5  | 32    | 45    | 8            | 1,4  | GZ38100G |
| C             | 1,5 - 3   | 16 - 8           | $\geq 20$               | 14                | 12,2              | 88    | 40    | 45    | 8            | 3,0  | GZ38100C |
| D             | 1,5 - 3,5 | 16 - 7           | $\geq 24$               | 16                | 15,2              | 99    | 48    | 48    | 8            | 5,0  | GZ38100D |
| E             | 2 - 4     | 12 - 6           | $\geq 30$               | 20                | 19,5              | 115   | 60    | 50    | 9            | 5,0  | GZ38100E |
| F             | 3 - 4     | 8 - 6            | $\geq 36$               | 25                | 23,7              | 133   | 72    | 56    | 10           | 5,0  | GZ38100F |

Max. nutzbare Gewindetiefe  $l_3$   
Max. usable thread depth  $l_3$

**2,5 x  $d_1$**

Empf. Anzugsdrehmoment  
Rec. tightening torque

ZIRK-GF  
SWP  
2,5x $d_1$   
IKZN

| Größe<br>Size | P<br>mm   | P<br>Gg/1" (tpi) | $\varnothing d_1$<br>mm | $\varnothing d_2$ | $\varnothing d_5$ | $l_1$ | $l_3$ | $l_4$ | Z<br>(teeth) | [Nm] |          |
|---------------|-----------|------------------|-------------------------|-------------------|-------------------|-------|-------|-------|--------------|------|----------|
| A             | 1 - 2     | 24 - 12          | $\geq 12$               | 10                | 7,2               | 74    | 30    | 40    | 6            | 0,9  | GZ38110A |
| B             | 1 - 2,5   | 24 - 10          | $\geq 14$               | 10                | 8,6               | 78,5  | 35    | 40    | 7            | 1,4  | GZ38110B |
| G             | 1 - 2,5   | 24 - 10          | $\geq 16$               | 12                | 10,5              | 88,5  | 40    | 45    | 8            | 1,4  | GZ38110G |
| C             | 1,5 - 3   | 16 - 8           | $\geq 20$               | 14                | 12,2              | 98    | 50    | 45    | 8            | 3,0  | GZ38110C |
| D             | 1,5 - 3,5 | 16 - 7           | $\geq 24$               | 16                | 15,2              | 111   | 60    | 48    | 8            | 5,0  | GZ38110D |
| E             | 2 - 4     | 12 - 6           | $\geq 30$               | 20                | 19,5              | 130   | 75    | 50    | 9            | 5,0  | GZ38110E |
| F             | 3 - 4     | 8 - 6            | $\geq 36$               | 25                | 23,7              | 151   | 90    | 56    | 10           | 5,0  | GZ38110F |

Max. nutzbare Gewindetiefe  $l_3$   
Max. usable thread depth  $l_3$

**3 x  $d_1$**

Empf. Anzugsdrehmoment  
Rec. tightening torque

ZIRK-GF  
SWP  
3x $d_1$   
IKZN

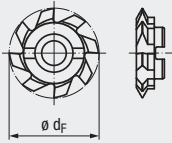
| Größe<br>Size | P<br>mm   | P<br>Gg/1" (tpi) | $\varnothing d_1$<br>mm | $\varnothing d_2$ | $\varnothing d_5$ | $l_1$ | $l_3$ | $l_4$ | Z<br>(teeth) | [Nm] |          |
|---------------|-----------|------------------|-------------------------|-------------------|-------------------|-------|-------|-------|--------------|------|----------|
| A             | 1 - 2     | 24 - 12          | $\geq 12$               | 10                | 7,2               | 80    | 36    | 40    | 6            | 0,9  | GZ38120A |
| B             | 1 - 2,5   | 24 - 10          | $\geq 14$               | 10                | 8,6               | 85,5  | 42    | 40    | 7            | 1,4  | GZ38120B |
| G             | 1 - 2,5   | 24 - 10          | $\geq 16$               | 12                | 10,5              | 96,5  | 48    | 45    | 8            | 1,4  | GZ38120G |
| C             | 1,5 - 3   | 16 - 8           | $\geq 20$               | 14                | 12,2              | 108   | 60    | 45    | 8            | 3,0  | GZ38120C |
| D             | 1,5 - 3,5 | 16 - 7           | $\geq 24$               | 16                | 15,2              | 123   | 72    | 48    | 8            | 5,0  | GZ38120D |
| E             | 2 - 4     | 12 - 6           | $\geq 30$               | 20                | 19,5              | 145   | 90    | 50    | 9            | 5,0  | GZ38120E |
| F             | 3 - 4     | 8 - 6            | $\geq 36$               | 25                | 23,7              | 169   | 108   | 56    | 10           | 5,0  | GZ38120F |

Lieferumfang: ohne Stirn-Wechselplatte, mit Spannschraube  
Delivery: without exchangeable face insert, with clamping screw

**Achtung:** Beim Anziehen der Spannschraube ist das **empfohlene Anzugsdrehmoment** zu beachten  
**Note:** When tightening the clamping screw, the **recommended tightening torque** must be used

# Stirn-Wechselplatten

## Exchangeable face inserts


**HM**  
Carbide

**ALCR**  
T42

**RH + LH**

**ZIRK-GF**

 Einsatzgebiete – Material  
Applications – material

» 358

**P** 1.1-5.1

**M** 1.1-4.1

**K** 1.1-4.2

**N** 1.1-5.3

**S** 1.1-2.6

 Product  
Finder

 $v_c / f_z$ 
**M**
**MF**
**UNC**  
UN, UNS

**UNF**  
UNEF

**G, Rp**
**NPT, NPTF**  
Rc, W

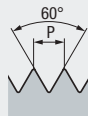
**BSW, BSF**
**Pg**
**MJ**  
UNJC, UNJF

**EG (STI)**
**SELF-LOCK**
**Tr**
**Zubehör**  
Accessories

**BGF**
**ZBGF**
**GSF**
**GF**
**GF-VZ**
**GF-KEG**
**ZGF**
**ZIRK-GF**
**Gigant**
**MoSys**

# M, MF, UN

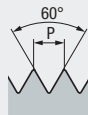
DIN 13, ASME B1.1


 Für Innengewinde  
For internal threads


| Größe<br>Size | P<br>mm   | P<br>Gg/1" (tpi) | Ø d <sub>1</sub><br>mm | Ø d <sub>F</sub><br>mm | Z<br>(teeth) | SWP<br>ALCR-T42 |
|---------------|-----------|------------------|------------------------|------------------------|--------------|-----------------|
| A             | 1 - 1,75  | 24 - 13          | ≥ 12                   | 9,9                    | 6            | GF65310A.9512   |
|               | 1,75 - 2  | 14 - 12          | ≥ 14                   | 9,9                    | 6            | GF65310A.0114   |
| B             | 1 - 2     | 24 - 12          | ≥ 14                   | 11,6                   | 7            | GF65320A.9512   |
|               | 2 - 2,5   | 12 - 10          | ≥ 16                   | 11,9                   | 7            | GF65320A.0118   |
| G             | 1 - 2     | 24 - 12          | ≥ 16                   | 13,6                   | 8            | GF65370A.9512   |
|               | 2 - 2,5   | 12 - 10          | ≥ 18                   | 13,9                   | 8            | GF65370A.0118   |
| C             | 1,5 - 2,5 | 16 - 10          | ≥ 20                   | 15,9                   | 8            | GF65330A.9514   |
|               | 2,5 - 3   | 10 - 8           | ≥ 24                   | 15,9                   | 8            | GF65330A.0124   |
| D             | 1,5 - 3   | 16 - 8           | ≥ 24                   | 19,9                   | 8            | GF65340A.9514   |
|               | 3 - 3,5   | 8 - 7            | ≥ 30                   | 19,9                   | 8            | GF65340A.0130   |
| E             | 2 - 3,5   | 12 - 7           | ≥ 30                   | 24,9                   | 9            | GF65350A.9516   |
|               | 3,5 - 4   | 7 - 6            | ≥ 36                   | 24,9                   | 9            | GF65350A.0136   |
| F             | 3 - 4     | 8 - 6            | ≥ 36                   | 29,9                   | 10           | GF65360A.9518   |

# M, MF, UN

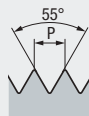
DIN 13, ASME B1.1


 Für Außengewinde  
For external threads


| Größe<br>Size | P<br>mm | P<br>Gg/1" (tpi) | Ø d <sub>1</sub><br>mm | Ø d <sub>F</sub><br>mm | Z<br>(teeth) | SWP-Extern<br>ALCR-T42 |
|---------------|---------|------------------|------------------------|------------------------|--------------|------------------------|
| C             | 1       | 24               | ≥ 6                    | 15,9                   | 8            | GF65130A.9512          |
|               | 1,25    | 20               | ≥ 8                    | 15,9                   | 8            | GF65130A.9513          |
|               | 1,5     | 18 - 16          | ≥ 10                   | 15,9                   | 8            | GF65130A.9514          |
|               | 1,75    | 14               | ≥ 12                   | 15,9                   | 8            | GF65130A.9515          |
|               | 2       | 12               | ≥ 14                   | 15,9                   | 8            | GF65130A.9516          |
|               | 2,5     | 11 - 10          | ≥ 18                   | 15,9                   | 8            | GF65130A.9517          |

# G (BSP), BSW, BSF, W

DIN EN ISO 228, BS 84


 Für Innen- und Außengewinde  
For internal and external threads


| Größe<br>Size | P<br>Gg/1" (tpi) | Gewinde<br>Thread | Ø d <sub>1</sub><br>mm | Ø d <sub>F</sub><br>mm | Z<br>(teeth) | SWP<br>ALCR-T42 |
|---------------|------------------|-------------------|------------------------|------------------------|--------------|-----------------|
| A             | 19 - 32          | G 1/4             | ≥ 12                   | 9,9                    | 6            | GF65310A.9545   |
| B             | 16 - 26          | G 3/8             | ≥ 14                   | 11,9                   | 7            | GF65320A.9545   |
| G             | 16 - 26          | G 3/8             | ≥ 16                   | 13,9                   | 8            | GF65370A.9545   |
| C             | 14 - 20          | G 1/2, G 5/8      | ≥ 20                   | 15,9                   | 8            | GF65330A.9548   |
| D             | 10 - 14          | ≥ G 3/4           | ≥ 24                   | 19,9                   | 8            | GF65340A.9550   |
| E             | 8 - 14           | ≥ G 7/8           | ≥ 30                   | 24,9                   | 9            | GF65350A.9550   |
| F             | 7 - 11           | ≥ G 1 1/8         | ≥ 36                   | 29,9                   | 10           | GF65360A.9550   |

Product Finder

$v_c / f_z$

M

MF

UNC  
UN, UNS

UNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



HM  
Carbide

ALCR  
T42

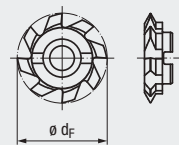
RH + LH



ZIRK-GF



Stirn-Wechselplatten  
Exchangeable face inserts

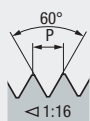


Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1  
M 1.1-4.1  
K 1.1-4.2  
N 1.1-5.3  
S 1.1-2.6

**NPT**



ANSI/ASME B1.20.1



Für kegeliges Innengewinde  
For internal tapered threads



| Größe<br>Size | P<br>Gg/1" (tpi) | Gewinde<br>Thread | $\phi d_1$<br>mm | $\phi d_F$<br>mm | Z<br>(teeth) |
|---------------|------------------|-------------------|------------------|------------------|--------------|
| A             | 18               | 1/4, 3/8          | $\geq 12$        | 9,9              | 5            |
| C             | 14               | 1/2, 3/4          | $\geq 20$        | 15,9             | 5            |
| E             | 11 1/2           | 1" - 2"           | $\geq 30$        | 24,9             | 6            |
| F             | 8                | 2 1/2 - 8"        | $\geq 36$        | 29,9             | 9            |

SWP  
ALCR-T42

GF65310A.9677  
GF65330A.9678  
GF65350A.9679  
GF65360A.9680

Ersatz-Spannschrauben  
Spare clamping screws



| Größe<br>Size         | Empf. Anzugsdrehmoment<br>Rec. tightening torque<br>[Nm] |          |
|-----------------------|----------------------------------------------------------|----------|
| A M2,5 x 8,5; Torx T7 | 0,9                                                      | GZ349011 |
| B M3 x 11; Torx T9    | 1,4                                                      | GZ349012 |
| G M3 x 11; Torx T9    | 1,4                                                      | GZ349012 |
| C M4 x 13; Torx T15   | 3,0                                                      | GZ349013 |
| D M5 x 15; Torx T20   | 5,0                                                      | GZ349014 |
| E M5 x 15; Torx T20   | 5,0                                                      | GZ349014 |
| F M5 x 15; Torx T20   | 5,0                                                      | GZ349014 |

**Achtung:** Beim Anziehen der Spannschraube ist das **empfohlene Anzugsdrehmoment** zu beachten  
**Note:** When tightening the clamping screw, the **recommended tightening torque** must be used

Schraubendreher  
Screw driver



Drehmoment-  
Schraubendreher  
Torque screw driver



| Größe<br>Size |  |          |
|---------------|--|----------|
| A Torx T7     |  | GZ349021 |
| B Torx T9     |  | GZ349022 |
| G Torx T9     |  | GZ349022 |
| C Torx T15    |  | GZ349023 |
| D Torx T20    |  | GZ349024 |
| E Torx T20    |  | GZ349024 |
| F Torx T20    |  | GZ349024 |

| Größe<br>Size |  |          |
|---------------|--|----------|
| A Torx T7     |  | GZ349041 |
| B Torx T9     |  | GZ349042 |
| G Torx T9     |  | GZ349042 |
| C Torx T15    |  | GZ349043 |
| D Torx T20    |  | GZ349044 |
| E Torx T20    |  | GZ349044 |
| F Torx T20    |  | GZ349044 |

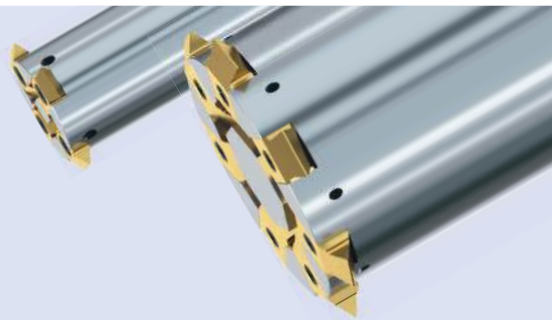
## Gigant-ic

### Vorteile:

- Flexibilität

### Advantages:

- Flexibility



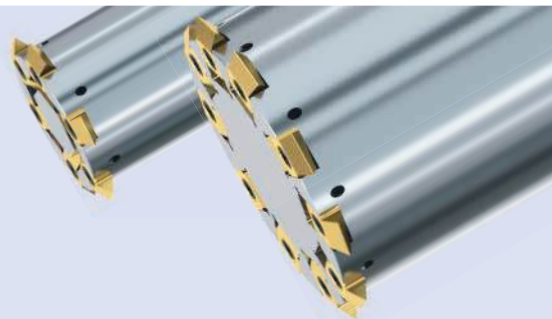
## Gigant sprinter

### Vorteile:

- Schnelligkeit

### Advantages:

- Fast operation



## Gigant soft run

Hartmetall-Träger

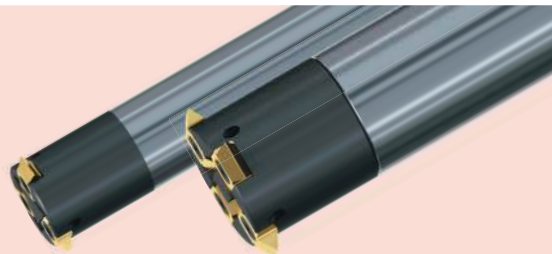
Carbide tool body

### Vorteile:

- Laufruhe
- Stabilität

### Advantages:

- Smooth operation
- Stability



## Gigant soft run sprinter

Hartmetall-Träger

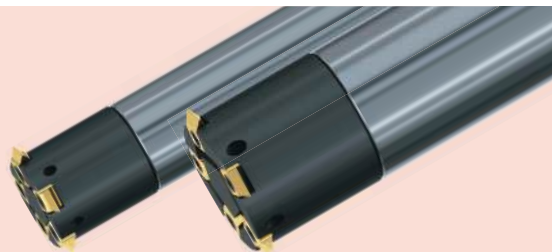
Carbide tool body

### Vorteile:

- Schnelligkeit
- Laufruhe
- Stabilität

### Advantages:

- Fast operation
- Smooth operation
- Stability



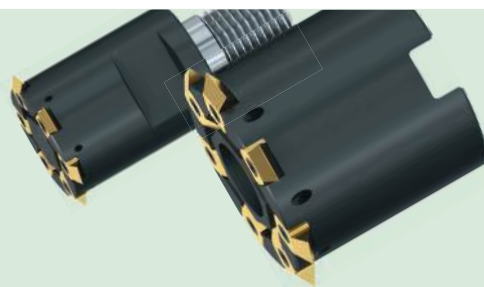
## Gigant modular

### Vorteile:

- Modularer Aufbau

### Advantages:

- Modular construction



## Gigant modular sprinter

### Vorteile:

- Flexible Längen
- Kürzere Bearbeitungszeit

### Advantages:

- Flexible lengths
- Reduced machining times



Product  
Finder

$v_c / f_z$

M

MF

UNC  
UN, UNS

UNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

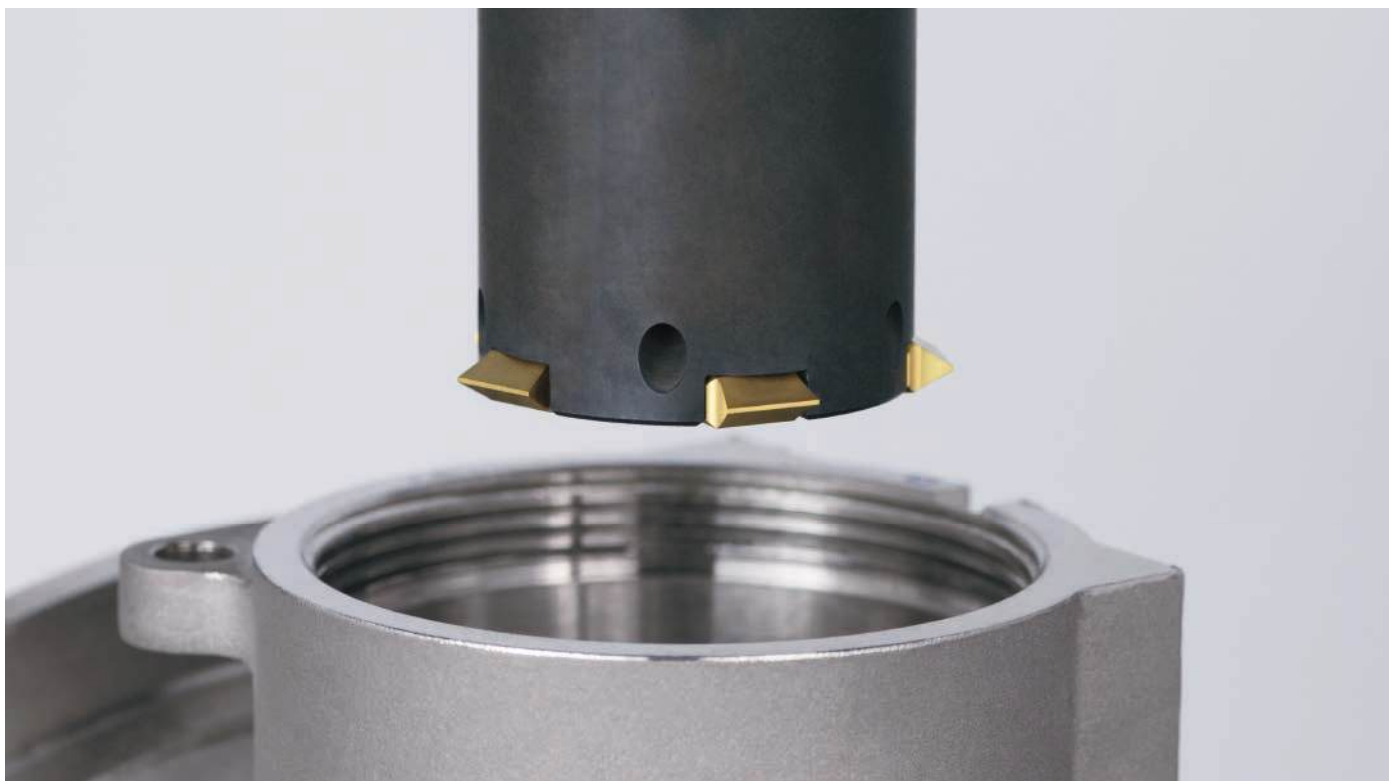
ZIRK-GF

**Gigant**

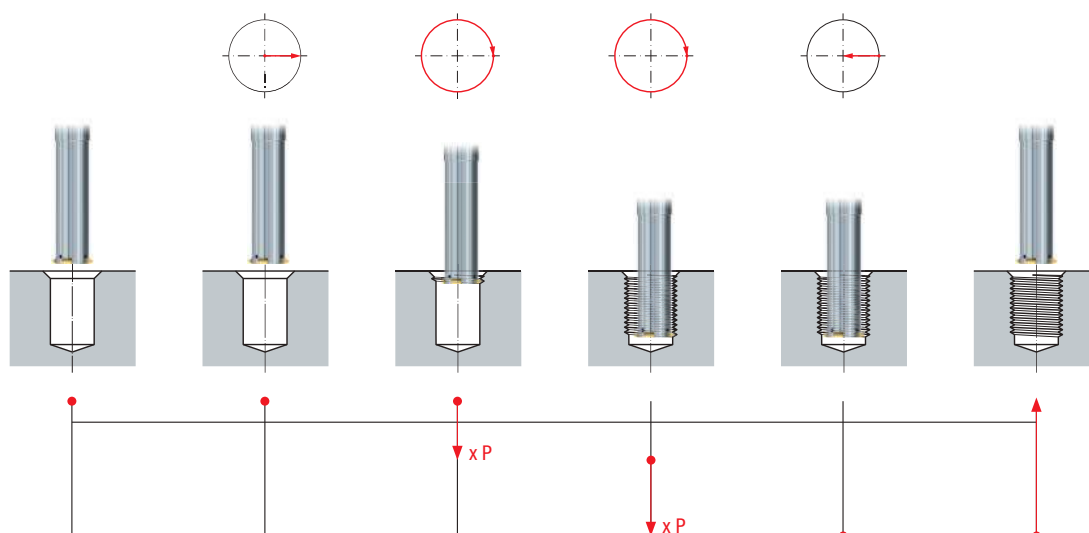
MoSys



| Product Finder         |
|------------------------|
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |

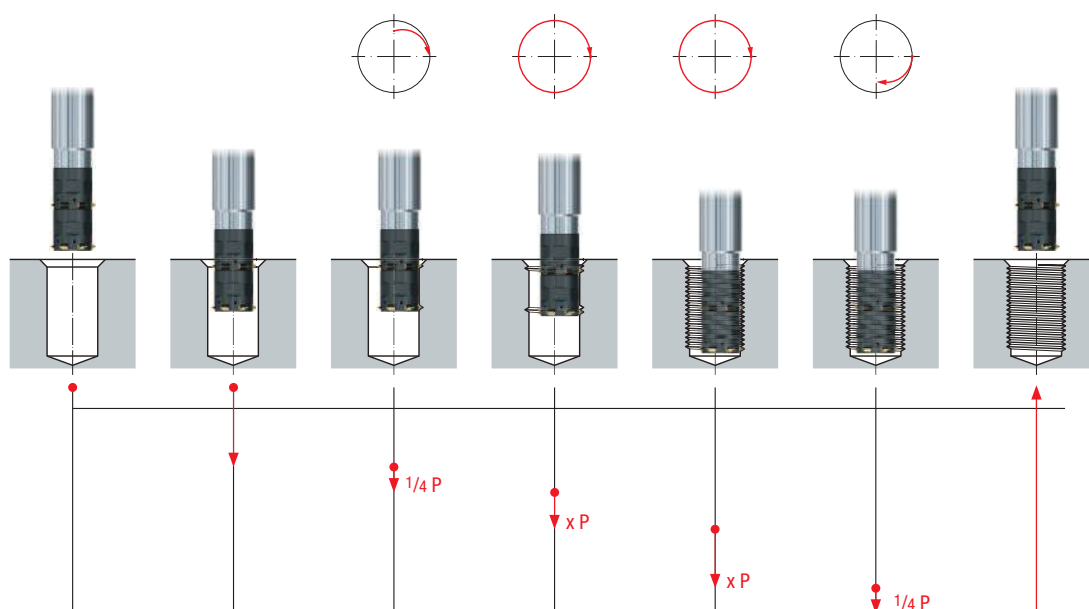


### Gewindefräszyklus · Thread milling cycle



### Gewindefräszyklus · Thread milling cycle

#### Gigant modular sprinter





**Gigant**



Größe · Size  
**10**  
≥ 20 mm



Größe · Size  
**11**  
≥ 30 mm



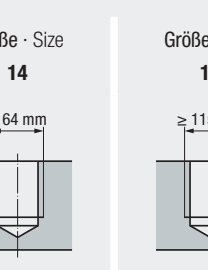
Größe · Size  
**12**  
≥ 40 mm



Größe · Size  
**13**  
≥ 48 mm



Größe · Size  
**14**  
≥ 64 mm

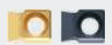


Größe · Size  
**15**  
≥ 115 mm

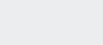
Seite · Page

|     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|
| 494 | 496 | 498 | 500 | 502 | 504 |
|-----|-----|-----|-----|-----|-----|

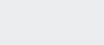
| Product Finder         |
|------------------------|
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |



Größe · Size  
**10**  
≤ 3 mm (8 tpi)



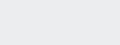
Größe · Size  
**11**  
≤ 4 mm (6 tpi)



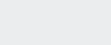
Größe · Size  
**12**  
≤ 5,5 mm (4.5 tpi)



Größe · Size  
**13**  
≤ 6 mm (4 tpi)



Größe · Size  
**14**  
≤ 8 mm (3.5 tpi)



Größe · Size  
**15**  
≤ 12 mm (4 tpi)

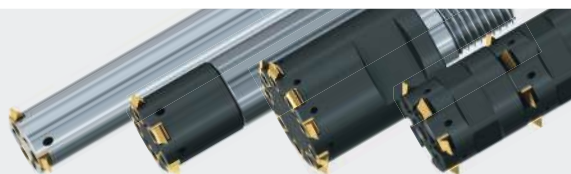
|         |
|---------|
| BGF     |
| ZBGF    |
| GSF     |
| GF      |
| GF-VZ   |
| GF-KEG  |
| ZGF     |
| ZIRK-GF |
| Gigant  |
| MoSys   |



|                                                                                                                                                                                                                                                  |                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
|  <p>Fräsringe zum Entfernen des unvollständigen Ganges<br/>Milling rings for removal of the incomplete thread</p>                                             | Seite · Page<br>506 |
|  <p>Aufnahmen und Verlängerungen für Gigant modular und Gigant modular sprinter<br/>Holders and extensions for Gigant modular and Gigant modular sprinter</p> | 508 - 509           |

# 10

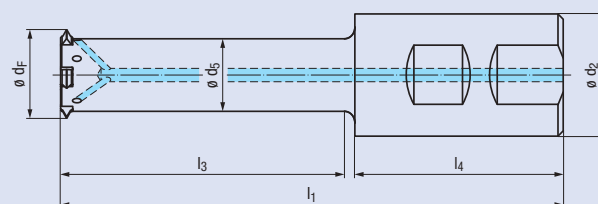
Für Abmessungen ab Gewindedurchmesser 20 mm  
For thread sizes from thread diameter 20 mm



### Gigant-ic

### Gigant sprinter

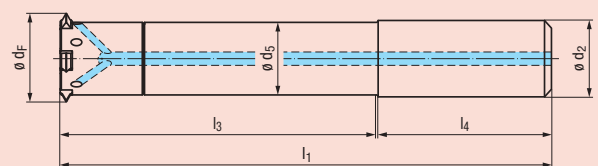
| DIN 1835                                                                          |                        |                  | Z2 - Z5          |                |                                                                                   |                |                |  |  |
|-----------------------------------------------------------------------------------|------------------------|------------------|------------------|----------------|-----------------------------------------------------------------------------------|----------------|----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |                        |                  |                  |                |  |                |                |                                                                                   |                                                                                   |
| ø d <sub>1</sub><br>mm                                                            | ø d <sub>F</sub><br>mm | ø d <sub>2</sub> | ø d <sub>5</sub> | l <sub>1</sub> | l <sub>3</sub>                                                                    | l <sub>4</sub> | Z<br>(Inserts) | Gigant-ic<br>Gr.10-IKZN                                                           | Gigant<br>sprinter<br>Gr.10-IKZN                                                  |
| ≥ 20                                                                              | 17                     | 12               | 12               | 87             | 40                                                                                | 45             | 2              | GZ341000                                                                          |                                                                                   |
| ≥ 24                                                                              | 20,5                   | 16               | 15,9             | 100            | 50                                                                                | 48             | 3              | GZ341040                                                                          |                                                                                   |
| ≥ 24                                                                              | 20,5                   | 16               | 15,9             | 115            | 65                                                                                | 48             | 3              | GZ341050                                                                          |                                                                                   |
| ≥ 30                                                                              | 23,85                  | 32               | 19               | 145            | 80                                                                                | 60             | 5              |                                                                                   | GZ341200                                                                          |



### Gigant soft run

### Gigant soft run sprinter

| DIN 6535                                                                             |                        |  |                  | Z2 - Z8        |                |  |                |  |  |
|--------------------------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------|------------------|----------------|----------------|-----------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  HA |                        |                                                                                   |                  |                |                |                                                                                   |                | Gigant<br>soft run<br>Gr.10-IKZN                                                  | Gigant<br>soft run sprinter<br>Gr.10-IKZN                                         |
| ø d <sub>1</sub><br>mm                                                               | ø d <sub>F</sub><br>mm | ø d <sub>2</sub>                                                                  | ø d <sub>5</sub> | l <sub>1</sub> | l <sub>3</sub> | l <sub>4</sub>                                                                    | Z<br>(Inserts) |                                                                                   |                                                                                   |
| ≥ 20                                                                                 | 17                     | 12                                                                                | 12               | 97             | 50             | 45                                                                                | 2              | GZ34A010                                                                          |                                                                                   |
| ≥ 24                                                                                 | 20,5                   | 16                                                                                | 15,9             | 115            | 65             | 48                                                                                | 3              | GZ34A000                                                                          |                                                                                   |
| ≥ 30                                                                                 | 23,85                  | 20                                                                                | 19               | 142            | 90             | 50                                                                                | 5              |                                                                                   | GZ34C000                                                                          |
| ≥ 36                                                                                 | 30                     | 25                                                                                | 25               | 153            | 95             | 56                                                                                | 7              |                                                                                   | GZ34C010                                                                          |
| ≥ 40                                                                                 | 32,85                  | 32                                                                                | 27,7             | 178            | 115            | 60                                                                                | 8              |                                                                                   | GZ34C020                                                                          |

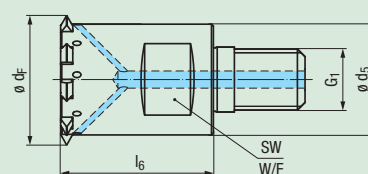


Mit variabler Länge auf Anfrage  
With variable length upon request

### Gigant modular

|                                                                                     |                                                                                     |                                                                                     |       |       |             |                |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------------|----------------|-------------------------------------------------------------------------------------|
|  |  |  |       |       |             |                |  |
| $\varnothing d_1$<br>mm                                                             | $\varnothing d_F$<br>mm                                                             | $\varnothing d_5$                                                                   | $l_6$ | $G_1$ | SW<br>(W/F) | Z<br>(Inserts) | <b>Gigant<br/>modular<br/>Gr.10-IKZN</b>                                            |
| $\geq 40$                                                                           | 34,25                                                                               | 28,8                                                                                | 38    | M16   | 22          | 9              | <b>GZ351000</b>                                                                     |

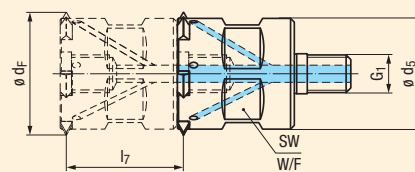
Nur einzeln einsetzbar  
Can only be used individually



### Gigant modular sprinter

|                                                                                     |                                                                                     |                                                                                     |    |        |             |                |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----|--------|-------------|----------------|-------------------------------------------------------------------------------------|
|  |  |  |    |        |             |                |  |
| ø d1<br>mm                                                                          | ø dF<br>mm                                                                          | ø d5                                                                                | l7 | G1     | SW<br>(W/F) | Z<br>(Inserts) | <b>Gigant<br/>modular sprinter<br/>Gr.10-IKZN</b>                                   |
| ≥ 32                                                                                | 27                                                                                  | 22,15                                                                               | 24 | M8 x 1 | 19          | 6              | <b>GZ353000</b>                                                                     |

Je nach Anwendung empfehlen wir, max. 3 Gigant modular sprinter  
miteinander zu kombinieren  
Depending on the application, we recommend to combine up to a maximum  
of 3 Gigant modular sprinter



Die Innensechskant-Schraube zum stirnseitigen Verschließen der Kühlmittel-Bohrung  
ist im Lieferumfang enthalten  
The hexagon socket screw to close the coolant hole on the face side is included with the delivery

Lieferumfang: ohne 2-Zahn-Wendeplatten, mit Spannschrauben  
Delivery: without 2-tooth indexable inserts, with clamping screws

**Achtung:** Beim Anziehen der Spannschraube ist das **empfohlene Anzugsdrehmoment** von **0,9 Nm** zu beachten  
**Note:** When tightening the clamping screw, the **recommended tightening torque 0.9 Nm** must be used



Fräsringe zum Entfernen des unvollständigen Ganges siehe Seite 506  
Milling rings for removal of the incomplete thread, see page 506

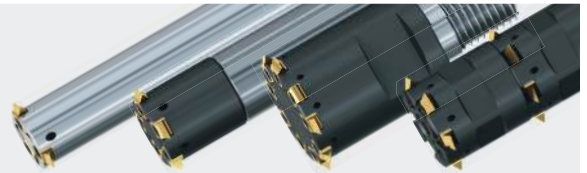


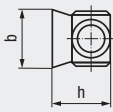
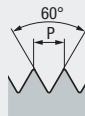
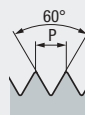
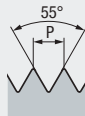
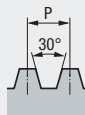
Aufnahmen und Verlängerungen für Gigant modular und Gigant modular sprinter siehe Seite 508 - 509  
Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 508 - 509

10

## 2-Zahn-Wendeplatten für Steigungsbereich bis 3 mm (8 Gg/1")

2-tooth indexable inserts for a pitch range up to 3 mm (8 tpi)



|                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |   |   |                                      |               |                                                                                       |                                                                                       |                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---|---|--------------------------------------|---------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------|
|                                                                                                                                                                                                                                                                                                                                        |                  |   |   | HM<br>Carbide                        | RH + LH       |    |    |                        |
| Beschichtung · Coating                                                                                                                                                                                                                                                                                                                                                                                                 |                  |   |   |                                      |               | TIN                                                                                   | TIALN-T4                                                                              |                        |
| Einsatzgebiete – Material<br>Applications – material                                                                                                                                                                                                                                                                                                                                                                   |                  |   |   |                                      |               | P 1.1-5.1<br>N 1.1-5.3                                                                | M 1.1-4.1<br>S 1.1-2.6                                                                | K 1.1-4.2<br>H 1.1-1.2 |
| P<br>mm                                                                                                                                                                                                                                                                                                                                                                                                                | P<br>Gg/1" (tpi) | b | h |                                      |               | WP-Z2<br>Gr.10<br>TIN                                                                 | WP-Z2<br>Gr.10<br>TIALN-T4                                                            |                        |
| <h1>M, MF, UN</h1> <div>DIN 13, ASME B1.1</div> <div></div>                                                                                                         |                  |   |   |                                      |               |    |    |                        |
| 1 - 2,5                                                                                                                                                                                                                                                                                                                                                                                                                | 24 - 10          | 5 | 7 | GF643005.9512                        |               | GF643007.9512                                                                         |                                                                                       |                        |
| 1,5 - 3                                                                                                                                                                                                                                                                                                                                                                                                                | 16 - 8           | 5 | 7 | GF643005.9514                        |               | GF643007.9514                                                                         |                                                                                       |                        |
| <h1>M, MF</h1> <div>DIN 13</div> <div></div>                                                                                                                                                                                                         |                  |   |   |                                      |               |    |                                                                                       |                        |
| 1,5                                                                                                                                                                                                                                                                                                                                                                                                                    |                  | 5 | 7 |                                      |               | GF641007.9514                                                                         |                                                                                       |                        |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                      |                  | 5 | 7 |                                      |               | GF641007.9516                                                                         |                                                                                       |                        |
| <h1>G (BSP), BSW, BSF, W</h1> <div>DIN EN ISO 228, BS 84</div> <div></div> |                  |   |   |                                      |               |  |  |                        |
| (1,814)                                                                                                                                                                                                                                                                                                                                                                                                                | 14 (9 - 28)      | 5 | 7 | GF643005.9548                        |               | GF643007.9548                                                                         |                                                                                       |                        |
| <h1>Tr</h1> <div>DIN 103</div> <div></div>                                 |                  |   |   |                                      |               |  |                                                                                       |                        |
| 1,5                                                                                                                                                                                                                                                                                                                                                                                                                    |                  | 5 | 7 | $\varnothing d_{1 \min.} = d_F + 11$ | GF643007.9597 |                                                                                       |                                                                                       |                        |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                      |                  | 5 | 7 | $\varnothing d_{1 \min.} = d_F + 14$ | GF643007.9599 |                                                                                       |                                                                                       |                        |

Zubehör  
AccessoriesAndere Ausführungen auf Anfrage, z.B.  
Other designs upon request, e.g.Einstechplatten in verschiedenen Ausführungen  
Infeed inserts in various designs

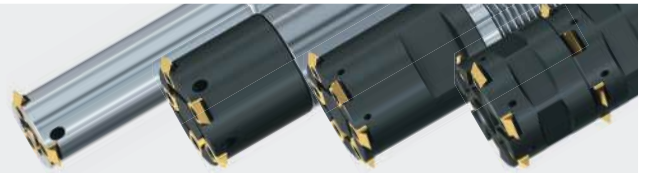
|  |                                                                       |            |
|--|-----------------------------------------------------------------------|------------|
|  | Ersatzschraube M2,5 x 8,5; Torx T7<br>Spare screw M2.5 x 8.5; Torx T7 | } GZ349010 |
|  | Schraubendreher Torx T7<br>Screw driver Torx T7                       |            |
|  | Drehmoment-Schraubendreher Torx T7<br>Torque screw driver Torx T7     | } GZ349040 |
|  | Verschluss-Schraube M8x1 x 10; SW4<br>Screw plug M8x1 x 10; SW4       |            |
|  |                                                                       | } GZ359310 |





## 11

**4-Zahn-Wendeplatten für Steigungsbereich bis 4 mm (6 Gg/1")**  
 4-tooth indexable inserts for a pitch range up to 4 mm (6 tpi)



|                                                          |                  |      |      |                                                        |         |                                                        |                                                        |
|----------------------------------------------------------|------------------|------|------|--------------------------------------------------------|---------|--------------------------------------------------------|--------------------------------------------------------|
|                                                          |                  |      |      | HM<br>Carbide                                          | RH + LH |                                                        |                                                        |
|                                                          |                  |      |      | Beschichtung · Coating                                 |         | TIN                                                    | TIALN-T4                                               |
| Einsatzgebiete – Material<br>Applications – material     |                  |      |      | <div> <div>P 1.1-5.1</div> <div>N 1.1-5.3</div> </div> |         | <div> <div>M 1.1-4.1</div> <div>S 1.1-2.6</div> </div> | <div> <div>K 1.1-4.2</div> <div>H 1.1-1.2</div> </div> |
| P<br>mm                                                  | P<br>Gg/1" (tpi) | b    | h    | WP-Z4<br>Gr.11<br>TIN                                  |         | WP-Z4<br>Gr.11<br>TIALN-T4                             |                                                        |
| <b>M, MF, UN</b><br>DIN 13, ASME B1.1<br>                |                  |      |      | <br><br>                                               |         | <br>                                                   |                                                        |
| 1 - 2,5                                                  | 24 - 10          | 6,35 | 9,52 | GF643105.9512                                          |         | GF643107.9512                                          |                                                        |
| 1,5 - 2,5                                                | 16 - 10          | 6,35 | 9,52 | GF643105.9514                                          |         | GF643107.9514                                          |                                                        |
| 2,5 - 4                                                  | 10 - 6           | 6,35 | 9,52 | GF643105.9517                                          |         | GF643107.9517                                          |                                                        |
| <b>M, MF</b><br>DIN 13<br>                               |                  |      |      | <br>                                                   |         |                                                        |                                                        |
| 2,5                                                      |                  | 6,35 | 9,52 |                                                        |         | GF641107.9517                                          |                                                        |
| 3                                                        |                  | 6,35 | 9,52 |                                                        |         | GF641107.9518                                          |                                                        |
| <b>G (BSP), BSW, BSF, W</b><br>DIN EN ISO 228, BS 84<br> |                  |      |      | <br><br>                                               |         | <br>                                                   |                                                        |
| (2,309)                                                  | 11 (9 - 28)      | 6,35 | 9,52 | GF643105.9550                                          |         | GF643107.9550                                          |                                                        |
| <b>NPT</b><br>ANSI/ASME B1.20.1<br>                      |                  |      |      | <br><br>                                               |         |                                                        |                                                        |
| (2,209)                                                  | 11 1/2           | 6,35 | 9,52 |                                                        |         | GF643107.9679                                          |                                                        |
| <b>Tr</b><br>DIN 103<br>                                 |                  |      |      | <br><br>                                               |         |                                                        |                                                        |
| 3                                                        |                  | 6,35 | 9,52 | Ø d <sub>1</sub> min. = d <sub>F</sub> + 23            |         | GF643107.9601                                          |                                                        |
| 4                                                        |                  | 6,35 | 9,52 | Ø d <sub>1</sub> min. = d <sub>F</sub> + 32            |         | GF643107.9603                                          |                                                        |

### Zubehör Accessories

Andere Ausführungen auf Anfrage, z.B.  
 Other designs upon request, e.g.



ACME-Gewinde  
ACME thread

Rundgewinde  
Round thread

Sägewinde  
Buttress thread



Einstechplatten in verschiedenen Ausführungen  
 Infeed inserts in various designs



Ersatzschraube M2,5 x 8,5; Torx T7  
 Spare screw M2.5 x 8.5; Torx T7

GZ349011

Schraubendreher Torx T7  
 Screw driver Torx T7

GZ349021

Drehmoment-Schraubendreher Torx T7  
 Torque screw driver Torx T7

GZ349041

Verschluss-Schraube M10x1 x 12; SW5  
 Screw plug M10x1 x 12; SW5

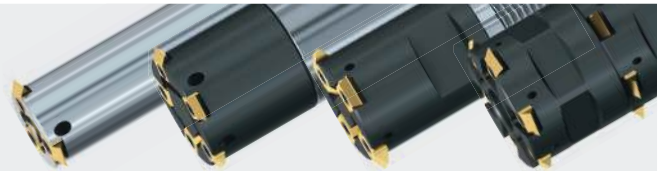
GZ359311





12

4-Zahn-Wendeplatten für Steigungsbereich bis 5,5 mm (4,5 Gg/1")  
4-tooth indexable inserts for a pitch range up to 5.5 mm (4.5 tpi)



|                                                      |                  |     |      |                                                        |         |                                                        |                                                        |
|------------------------------------------------------|------------------|-----|------|--------------------------------------------------------|---------|--------------------------------------------------------|--------------------------------------------------------|
|                                                      |                  |     |      | HM<br>Carbide                                          | RH + LH |                                                        |                                                        |
|                                                      |                  |     |      | Beschichtung · Coating                                 |         | TIN                                                    | TIALN-T4                                               |
| Einsatzgebiete – Material<br>Applications – material |                  |     |      | <div> <div>P 1.1-5.1</div> <div>N 1.1-5.3</div> </div> |         | <div> <div>M 1.1-4.1</div> <div>S 1.1-2.6</div> </div> | <div> <div>K 1.1-4.2</div> <div>H 1.1-1.2</div> </div> |
| P<br>mm                                              | P<br>Gg/1" (tpi) | b   | h    | WP-Z4<br>Gr.12<br>TIN                                  |         | WP-Z4<br>Gr.12<br>TIALN-T4                             |                                                        |
| <b>M, MF, UN</b><br>DIN 13, ASME B1.1                |                  |     |      |                                                        |         |                                                        |                                                        |
| 1,5 - 2,5                                            | 16 - 10          | 8,5 | 13,5 | GF643205.9514                                          |         | GF643207.9514                                          |                                                        |
| 2,5 - 5,5                                            | 10 - 4,5         | 8,5 | 13,5 | GF643205.9517                                          |         | GF643207.9517                                          |                                                        |
| <b>M, MF</b><br>DIN 13                               |                  |     |      |                                                        |         |                                                        |                                                        |
| 3,5                                                  |                  | 8,5 | 13,5 |                                                        |         | GF641207.9519                                          |                                                        |
| 4                                                    |                  | 8,5 | 13,5 |                                                        |         | GF641207.9520                                          |                                                        |
| <b>G (BSP), BSW, BSF, W</b><br>DIN EN ISO 228, BS 84 |                  |     |      |                                                        |         |                                                        |                                                        |
| (2,309)                                              | 11 (5 - 28)      | 8,5 | 13,5 | GF643205.9550                                          |         | GF643207.9550                                          |                                                        |
| <b>NPT</b><br>ANSI/ASME B1.20.1                      |                  |     |      |                                                        |         |                                                        |                                                        |
| (3,175)                                              | 8                | 8,5 | 13,5 |                                                        |         | GF643207.9680                                          |                                                        |
| <b>Tr</b><br>DIN 103                                 |                  |     |      |                                                        |         |                                                        |                                                        |
| 4                                                    |                  | 8,5 | 13,5 | $\emptyset d_{1 \text{ min.}} = d_F + 32$              |         | GF643207.9603                                          |                                                        |
| 5                                                    |                  | 8,5 | 13,5 | $\emptyset d_{1 \text{ min.}} = d_F + 41$              |         | GF643207.9604                                          |                                                        |

### Zubehör Accessories

Andere Ausführungen auf Anfrage, z.B.  
Other designs upon request, e.g.

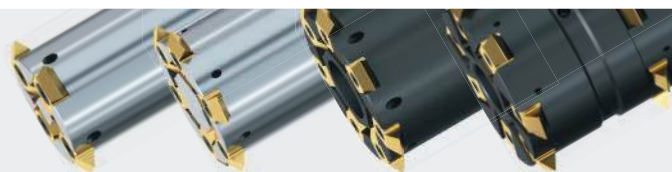


Einstechplatten in verschiedenen Ausführungen  
Infeed inserts in various designs



# 13

Für Abmessungen ab Gewindedurchmesser 48 mm  
For thread sizes, from thread diameter 48 mm

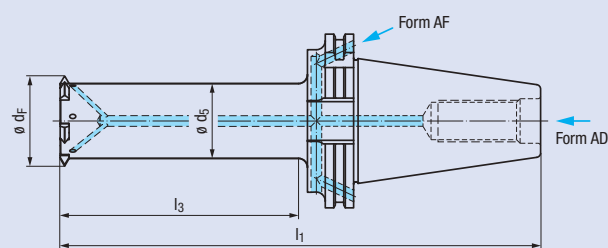
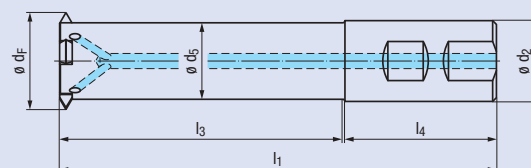


### Gigant-ic

### Gigant sprinter

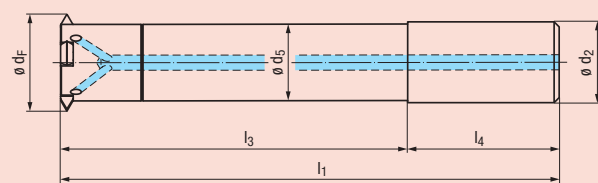
| DIN 1835                                                                            |                        |                                                                                   |                  |                                                                                   |                |                |                | Z4 - Z5                 |                                  |  |  |
|-------------------------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------|----------------|----------------|----------------|-------------------------|----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  B |                        |  |                  |  |                |                |                |                         |                                  |                                                                                   |                                                                                   |
| ø d <sub>1</sub><br>mm                                                              | ø d <sub>F</sub><br>mm | ø d <sub>2</sub>                                                                  | ø d <sub>5</sub> | l <sub>1</sub>                                                                    | l <sub>3</sub> | l <sub>4</sub> | Z<br>(Inserts) | Gigant-ic<br>Gr.13-IKZN | Gigant<br>sprinter<br>Gr.13-IKZN |                                                                                   |                                                                                   |
| ≥ 48                                                                                | 40,25                  | 32                                                                                | 31               | 173                                                                               | 110            | 60             | 4              | GZ341153                |                                  |                                                                                   |                                                                                   |
| ≥ 48                                                                                | 40,25                  | 32                                                                                | 31               | 208                                                                               | 145            | 60             | 4              | GZ341143                |                                  |                                                                                   |                                                                                   |
| ≥ 60                                                                                | 48                     | 40                                                                                | 38               | 245                                                                               | 170            | 70             | 5              |                         | GZ341203                         |                                                                                   |                                                                                   |

| DIN ISO 7388-1                                                                    |                                                                                   |                   |                                                                                   |       |       |                | Z4 - Z6                 |                                  |  |  |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-------|-------|----------------|-------------------------|----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |                   |  |       |       |                |                         |                                  |                                                                                   |                                                                                   |
| $\varnothing d_1$<br>mm                                                           | $\varnothing d_F$<br>mm                                                           | $\varnothing d_5$ | $l_1$                                                                             | $l_3$ | SK    | Z<br>(Inserts) | Gigant-ic<br>Gr.13-IKZN | Gigant<br>sprinter<br>Gr.13-IKZN |                                                                                   |                                                                                   |
| $\geq 48$                                                                         | 40,25                                                                             | 31                | 212                                                                               | 110   | SK 40 | 4              | GZ343003                |                                  |                                                                                   |                                                                                   |
| $\geq 48$                                                                         | 40,25                                                                             | 31                | 245                                                                               | 110   | SK 50 | 4              | GZ344003                |                                  |                                                                                   |                                                                                   |
| $\geq 48$                                                                         | 40,25                                                                             | 31                | 247                                                                               | 145   | SK 40 | 4              | GZ343103                |                                  |                                                                                   |                                                                                   |
| $\geq 48$                                                                         | 40,25                                                                             | 31                | 280                                                                               | 145   | SK 50 | 4              | GZ344103                |                                  |                                                                                   |                                                                                   |
| $\geq 64$                                                                         | 52,55                                                                             | 43,75             | 333                                                                               | 195   | SK 50 | 6              |                         | GZ344203                         |                                                                                   |                                                                                   |



### Gigant soft run

|                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |                   |                   |       |       |       |                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------|-------------------|-------|-------|-------|----------------|
| <div>DIN 6535</div> <div> HA</div> <div></div> <div> Z4</div> <div></div> |                         |                   |                   |       |       |       |                |
| $\varnothing d_1$<br>mm                                                                                                                                                                                                                                                                                                                                                                                            | $\varnothing d_F$<br>mm | $\varnothing d_2$ | $\varnothing d_5$ | $l_1$ | $l_3$ | $l_4$ | Z<br>(Inserts) |
| $\geq 48$                                                                                                                                                                                                                                                                                                                                                                                                          | 40,25                   | 32                | 31                | 207   | 145   | 60    | 4              |
| <div>Gigant<br/>soft run<br/>Gr.13-IKZN</div> <div>GZ34A003</div>                                                                                                                                                                                                                                                                                                                                                  |                         |                   |                   |       |       |       |                |

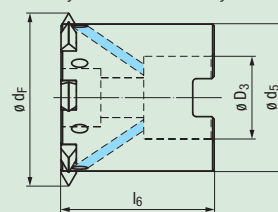


Mit variabler Länge auf Anfrage  
With variable length upon request

### Gigant modular

|                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |                   |       |       |                |                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------|-------|-------|----------------|--------------------------------------------|
| <div><div><div>DIN 138</div></div><div><div></div><div><div>Z7</div></div></div></div> <div></div> |                         |                   |       |       |                |                                            |
| $\varnothing d_1$<br>mm                                                                                                                                                                                                                                                                                                                                                                                                                        | $\varnothing d_F$<br>mm | $\varnothing d_5$ | $D_3$ | $l_6$ | Z<br>(Inserts) | <b>Gigant modular</b><br><b>Gr.13-IKZN</b> |
| $\geq 66$                                                                                                                                                                                                                                                                                                                                                                                                                                      | 57,5                    | 48                | 27    | 47,5  | 7              | <b>GZ352003</b>                            |

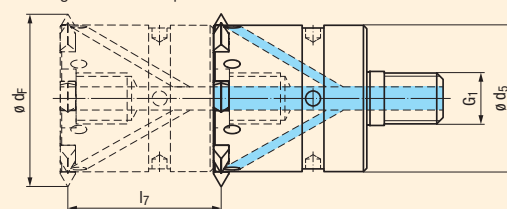
Nur einzeln einsetzbar  
Can only be used individually



### Gigant modular sprinter

|                                                                                     |                                                                                     |                                                                                     |       |           |                |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------|-----------|----------------|-------------------------------------------------------------------------------------|
|  |  |  |       |           |                |  |
| $\varnothing d_1$<br>mm                                                             | $\varnothing d_F$<br>mm                                                             | $\varnothing d_5$                                                                   | $l_7$ | $G_1$     | Z<br>(Inserts) | <b>Gigant<br/>modular sprinter<br/>Gr.13-IKZN</b>                                   |
| $\geq 66$                                                                           | 57,5                                                                                | 48                                                                                  | 48    | M18 x 1,5 | 7              | <b>GZ353003</b>                                                                     |

Je nach Anwendung empfehlen wir, max. 3 Gigant modular sprinter miteinander zu kombinieren  
Depending on the application, we recommend to combine up to a maximum of 3 Gigant modular sprinter



Die Innensechskant-Schraube zum stirnseitigen Verschließen der Kühlmittel-Bohrung ist im Lieferumfang enthalten  
The hexagon socket screw to close the coolant hole on the face side is included with the delivery

Das Maß  $l_7$  muss ein Vielfaches der Steigung P des herzustellenden Gewindes sein  
The measurement  $l_7$  must be a multiple of the pitch P of the thread to be produced

Lieferumfang: ohne 4-Zahn-Wendeplatten, mit Spannschrauben  
Delivery: without 4-tooth indexable inserts, with clamping screws



Fräsringe zum Entfernen des unvollständigen Ganges siehe Seite 506  
Milling rings for removal of the incomplete thread, see page 506



Aufnahmen und Verlängerungen für Gigant modular und Gigant modular sprinter siehe Seite 508 - 509  
Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 508 - 509

**Achtung:** Beim Anziehen der Spannschraube ist das **empfohlene Anzugsdrehmoment von 3,0 Nm** zu beachten

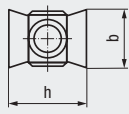
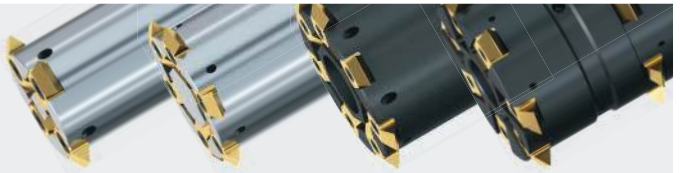
**Note:** When tightening the clamping screw, the **recommended tightening torque 3.0 Nm** must be used



13

4-Zahn-Wendeplatten für Steigungsbereich bis 6 mm (4 Gg/1")

4-tooth indexable inserts for a pitch range up to 6 mm (4 tpi)

HM  
Carbide

RH + LH



Beschichtung · Coating

TIN

TIALN-T4

Einsatzgebiete – Material  
Applications – material

» 358

|                  |                  |                  |
|------------------|------------------|------------------|
| <b>P</b> 1.1-5.1 | <b>M</b> 1.1-4.1 | <b>K</b> 1.1-4.2 |
| <b>N</b> 1.1-5.3 | <b>S</b> 1.1-2.6 | <b>H</b> 1.1-1.2 |

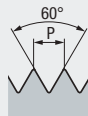
WP-Z4  
Gr.13  
TINWP-Z4  
Gr.13  
TIALN-T4P  
mmP  
Gg/1" (tpi)

b

h

M, MF, UN

DIN 13, ASME B1.1

1,5 - 3  
3 - 616 - 9  
9 - 49,5  
9,515,5  
15,5GF643305.9514  
GF643305.9518GF643307.9514  
GF643307.9518

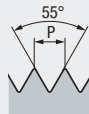
M, MF

DIN 13

4,5  
59,5  
9,515,5  
15,5GF641307.9521  
GF641307.9522

G (BSP), BSW, BSF, W

DIN EN ISO 228, BS 84



(2,309)

11 (4,5 - 12)

9,5

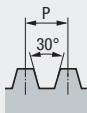
15,5

GF643305.9550

GF643307.9550

Tr

DIN 103



5

6

9,5  
9,515,5  
15,5 $\emptyset d_{1 \min.} = d_F + 43$  $\emptyset d_{1 \min.} = d_F + 53$ 

GF643307.9604

GF643307.9605

Andere Ausführungen auf Anfrage, z.B.  
Other designs upon request, e.g.ACME-Gewinde  
ACME threadRundgewinde  
Round threadSägewinde  
Buttress threadEinstechplatten in verschiedenen Ausführungen  
Infeed inserts in various designsZubehör  
AccessoriesErsatzschraube M4 x 13; Torx T15  
Spare screw M4 x 13; Torx T15

GZ349013

Schraubendreher Torx T15  
Screw driver Torx T15

GZ349023

Drehmoment-Schraubendreher Torx T15  
Torque screw driver Torx T15

GZ349043

Hakenschlüssel mit Zapfen  
nach DIN 1810-B 45-50 mm  
Hook wrench type B with pin  
acc. to DIN 1810-B 45-50 mm

GZ349053

Verschluss-Schraube M18x1,5 x 20; SW10  
Screw plug M18x1.5 x 20; SW10

GZ359313



# 14

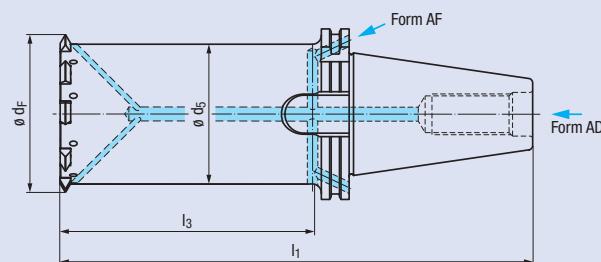
Für Abmessungen ab Gewindedurchmesser 64 mm  
For thread sizes, from thread diameter 64 mm



### Gigant-ic

### Gigant sprinter

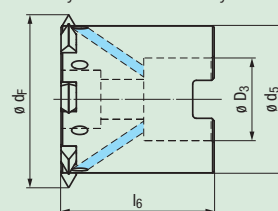
|                                                                                                                        |                                                |                                                                                                                  |                                                                                              |                                                                                              |                  |                            |                                     |                                           |
|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------|----------------------------|-------------------------------------|-------------------------------------------|
| <div>DIN ISO 7388-1</div> <div></div> |                                                | <div>Z4 - Z10</div> <div></div> | <div></div> | <div></div> |                  |                            |                                     |                                           |
| <div><math>\varnothing d_1</math><br/>mm</div>                                                                         | <div><math>\varnothing d_F</math><br/>mm</div> | <div><math>\varnothing d_5</math></div>                                                                          | <div><math>l_1</math></div>                                                                  | <div><math>l_3</math></div>                                                                  | <div>SK</div>    | <div>Z<br/>(Inserts)</div> | <div>Gigant-ic<br/>Gr.14-IKZN</div> | <div>Gigant sprinter<br/>Gr.14-IKZN</div> |
| <div><math>\geq 64</math></div>                                                                                        | <div>52,55</div>                               | <div>41</div>                                                                                                    | <div>253</div>                                                                               | <div>150</div>                                                                               | <div>SK 40</div> | <div>4</div>               | <div>GZ343014</div>                 |                                           |
| <div><math>\geq 64</math></div>                                                                                        | <div>52,55</div>                               | <div>41</div>                                                                                                    | <div>286</div>                                                                               | <div>150</div>                                                                               | <div>SK 50</div> | <div>4</div>               | <div>GZ344014</div>                 |                                           |
| <div><math>\geq 64</math></div>                                                                                        | <div>52,55</div>                               | <div>41</div>                                                                                                    | <div>298</div>                                                                               | <div>195</div>                                                                               | <div>SK 40</div> | <div>4</div>               | <div>GZ343114</div>                 |                                           |
| <div><math>\geq 64</math></div>                                                                                        | <div>52,55</div>                               | <div>41</div>                                                                                                    | <div>331</div>                                                                               | <div>195</div>                                                                               | <div>SK 50</div> | <div>4</div>               | <div>GZ344114</div>                 |                                           |
| <div><math>\geq 80</math></div>                                                                                        | <div>66,55</div>                               | <div>55</div>                                                                                                    | <div>308</div>                                                                               | <div>170</div>                                                                               | <div>SK 50</div> | <div>7</div>               | <div>GZ344024</div>                 |                                           |
| <div><math>\geq 80</math></div>                                                                                        | <div>66,55</div>                               | <div>55</div>                                                                                                    | <div>398</div>                                                                               | <div>260</div>                                                                               | <div>SK 50</div> | <div>7</div>               | <div>GZ344124</div>                 |                                           |
| <div><math>\geq 115</math></div>                                                                                       | <div>92</div>                                  | <div>80</div>                                                                                                    | <div>489</div>                                                                               | <div>360</div>                                                                               | <div>SK 50</div> | <div>10</div>              |                                     | <div>GZ344204</div>                       |



### Gigant modular

|                                                                                                                                                                                                                                                                                                                                             |                                                |                                         |                             |                             |                            |                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-----------------------------------------|-----------------------------|-----------------------------|----------------------------|----------------------------------------------------------------------------------------------|
| <div>DIN 138</div> <div></div> <div><div></div><div><div>Z7</div><div></div></div></div> |                                                |                                         |                             |                             |                            | <div></div> |
| <div><math>\varnothing d_1</math><br/>mm</div>                                                                                                                                                                                                                                                                                              | <div><math>\varnothing d_f</math><br/>mm</div> | <div><math>\varnothing d_5</math></div> | <div><math>D_3</math></div> | <div><math>l_6</math></div> | <div>Z<br/>(Inserts)</div> | <div>Gigant<br/>modular<br/>Gr.14-IKZN</div>                                                 |
| <div>80</div>                                                                                                                                                                                                                                                                                                                               | <div>71,5</div>                                | <div>60</div>                           | <div>27</div>               | <div>47</div>               | <div>7</div>               | <div>GZ352004</div>                                                                          |

Nur einzeln einsetzbar  
Can only be used individually

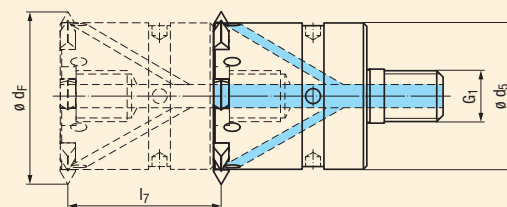


### Gigant modular sprinter

|                                                                                     |                                                                                     |                                                                                     |    |           |                |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----|-----------|----------------|-------------------------------------------------------------------------------------|
|  |  |  |    |           |                |  |
| ø d1<br>mm                                                                          | ø dF<br>mm                                                                          | ø d5                                                                                | l7 | G1        | Z<br>(Inserts) | <b>Gigant<br/>modular sprinter<br/>Gr.14-IKZN</b>                                   |
| 80                                                                                  | 71,5                                                                                | 60                                                                                  | 60 | M24 x 1,5 | 7              | <b>GZ353004</b>                                                                     |

Das Maß  $l_7$  muss ein Vielfaches der Steigung P des herzustellenden Gewindes sein  
The measurement  $l_7$  must be a multiple of the pitch P of the thread to be produced

Je nach Anwendung empfehlen wir, max. 3 Gigant modular sprinter  
miteinander zu kombinieren  
Depending on the application, we recommend to combine up to a maximum  
of 3 Gigant modular sprinter



Die Innensechskant-Schraube zum stirnseitigen Verschließen der Kühlmittel-Bohrung  
ist im Lieferumfang enthalten  
The hexagon socket screw to close the coolant hole on the face side is included with the delivery

Lieferumfang: ohne 4-Zahn-Wendeplatten, mit Spannschrauben  
Delivery: without 4-tooth indexable inserts, with clamping screws

**Achtung:** Beim Anziehen der Spannschraube ist das **empfohlene Anzugsdrehmoment** von **5,0 Nm** zu beachten  
**Note:** When tightening the clamping screw, the **recommended tightening torque** 5.0 Nm must be used



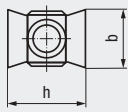
Fräsringe zum Entfernen des unvollständigen Ganges siehe Seite 506  
Milling rings for removal of the incomplete thread, see page 506



Aufnahmen und Verlängerungen für Gigant modular und Gigant modular sprinter siehe Seite 508 - 509  
Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 508 - 509

14

4-Zahn-Wendeplatten für Steigungsbereich bis 8 mm (3,5 Gg/1")  
4-tooth indexable inserts for a pitch range up to 8 mm (3.5 tpi)

HM  
Carbide

RH + LH



Beschichtung · Coating

TIN

TiAlN-T4

Einsatzgebiete – Material  
Applications – material

» 358

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2  
N 1.1-5.3 S 1.1-2.6 H 1.1-1.2

P  
mmP  
Gg/1" (tpi)

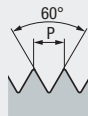
b

h

WP-Z4  
Gr.14  
TINWP-Z4  
Gr.14  
TiAlN-T4

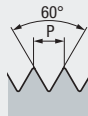
M, MF, UN

DIN 13, ASME B1.1

1,5 - 3  
3 - 616 - 9  
9 - 412,5  
12,519  
19GF643405.9514  
GF643405.9518GF643407.9514  
GF643407.9518

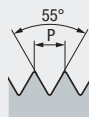
M, MF

DIN 13

5,5  
612,5  
12,519  
19GF641407.9709  
GF641407.9523

G (BSP), BSW, BSF, W

DIN EN ISO 228, BS 84



(2,309)

11 (3,5 - 12)

12,5

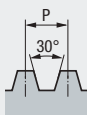
19

GF643405.9550

GF643407.9550

Tr

DIN 103



6

8

12,5  
12,519  
19 $\varnothing d_{1 \min.} = d_F + 61$  $\varnothing d_{1 \min.} = d_F + 84$ GF643407.9605  
GF643407.9736

### Zubehör Accessories

- 
 Ersatzschraube M5 x 15; Torx T20  
Spare screw M5 x 15; Torx T20
 } GZ349014
- 
 Schraubendreher Torx T20  
Screw driver Torx T20
 } GZ349024
- 
 Drehmoment-Schraubendreher Torx T20  
Torque screw driver Torx T20
 } GZ349044
- 
 Hakenschlüssel mit Zapfen  
nach DIN 1810-B 58-62 mm  
Hook wrench type B with pin  
acc. to DIN 1810-B 58-62 mm
 } GZ349054
- 
 Verschluss-Schraube M24x1,5 x 25; SW12  
Screw plug M24x1.5 x 25; SW12
 } GZ359314

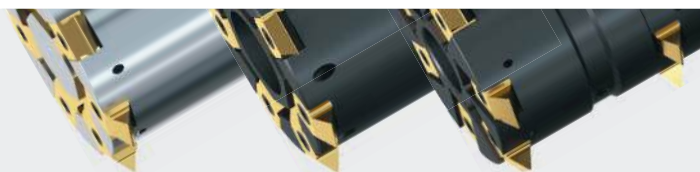
Andere Ausführungen auf Anfrage, z.B.  
Other designs upon request, e.g.

ACME-Gewinde  
ACME threadRundgewinde  
Round threadSägewinde  
Buttress thread

Einstechplatten in verschiedenen Ausführungen  
Infed inserts in various designs

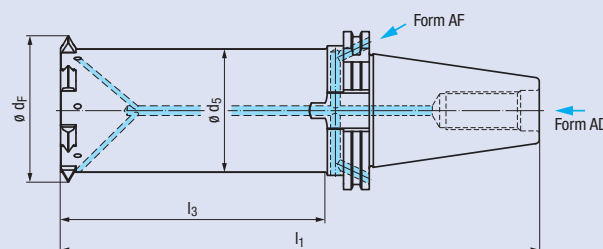
# 15

**Für Abmessungen ab Gewindedurchmesser 115 mm**  
For thread sizes, from thread diameter 115 mm



### Gigant-ic

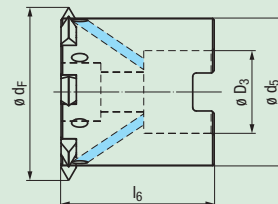
|                                                                                                                                  |                                                                                              |                                                                                                                      |                                                                                              |                                        |                             |                                       |                                  |
|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------|-----------------------------|---------------------------------------|----------------------------------|
| <div><div>DIN ISO 7388-1</div><div></div></div> | <div></div> | <div><div>Z7</div><div></div></div> | <div></div> |                                        |                             |                                       |                                  |
|                                                                                                                                  |                                                                                              |                                                                                                                      |                                                                                              |                                        |                             |                                       |                                  |
|                                                                                                                                  |                                                                                              |                                                                                                                      |                                                                                              |                                        |                             |                                       |                                  |
|                                                                                                                                  |                                                                                              |                                                                                                                      |                                                                                              |                                        |                             |                                       |                                  |
|                                                                                                                                  |                                                                                              |                                                                                                                      |                                                                                              |                                        |                             |                                       |                                  |
| <div><div><math>\varnothing d_1</math><br/>mm</div></div>                                                                        | <div><div><math>\varnothing d_F</math><br/>mm</div></div>                                    | <div><div><math>\varnothing d_5</math></div></div>                                                                   | <div><div><math>l_1</math></div></div>                                                       | <div><div><math>l_3</math></div></div> | <div><div>SK</div></div>    | <div><div>Z<br/>(Inserts)</div></div> | <div><div>Gigant-ic</div></div>  |
| <div><div><math>\geq 115</math></div></div>                                                                                      | <div><div>92</div></div>                                                                     | <div><div>76</div></div>                                                                                             | <div><div>341</div></div>                                                                    | <div><div>204</div></div>              | <div><div>SK 50</div></div> | <div><div>7</div></div>               | <div><div>Gr.15-IKZN</div></div> |
| <div><div><math>\geq 115</math></div></div>                                                                                      | <div><div>92</div></div>                                                                     | <div><div>76</div></div>                                                                                             | <div><div>497</div></div>                                                                    | <div><div>360</div></div>              | <div><div>SK 50</div></div> | <div><div>7</div></div>               | <div><div>GZ344035</div></div>   |
|                                                                                                                                  |                                                                                              |                                                                                                                      |                                                                                              |                                        |                             |                                       | <div><div>GZ344045</div></div>   |



### Gigant modular

|                         |                                                                                   |                                                                                   |                                                                                   |  |  |  |       |       |                |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|--|-------|-------|----------------|
| <b>DIN 138</b>          |  |  |  |  |  |  |       |       |                |
| $\varnothing d_1$<br>mm | $\varnothing d_F$<br>mm                                                           | $\varnothing d_5$                                                                 |                                                                                   |  |  |  | $D_3$ | $l_6$ | Z<br>(Inserts) |
| 115                     | 94                                                                                | 78                                                                                |                                                                                   |  |  |  | 32    | 55    | 7              |
|                         |                                                                                   |                                                                                   |                                                                                   |  |  |  |       |       |                |

Nur einzeln einsetzbar  
Can only be used individually

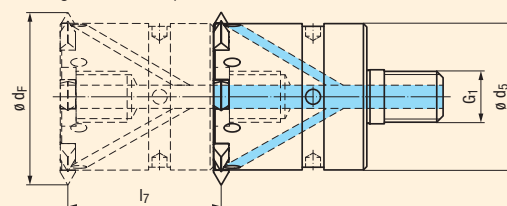


### Gigant modular sprinter

|                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |    |           |           |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|----|-----------|-----------|
|  |  |  |  |  |  |    |           |           |
| ø d1                                                                              | ø dF                                                                              | ø d5                                                                              |                                                                                   |  |  | l7 | G1        | Z         |
| mm                                                                                | mm                                                                                |                                                                                   |                                                                                   |  |  |    |           | (Inserts) |
| 115                                                                               | 94                                                                                | 78                                                                                |                                                                                   |  |  | 60 | M24 x 1,5 | 7         |
| <b>Gigant modular sprinter</b>                                                    |                                                                                   |                                                                                   |                                                                                   |  |  |    |           |           |
| <b>Gr.15-IKZN</b>                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |    |           |           |
| <b>GZ353005</b>                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |    |           |           |

Das Maß  $l_7$  muss ein Vielfaches der Steigung P des herzustellenden Gewindes sein  
The measurement  $l_7$  must be a multiple of the pitch P of the thread to be produced

Je nach Anwendung empfehlen wir, max. 3 Gigant modular sprinter miteinander zu kombinieren  
Depending on the application, we recommend to combine up to a maximum of 3 Gigant modular sprinter



Die Innensechskant-Schraube zum stirnseitigen Verschließen der Kühlmittel-Bohrung ist im Lieferumfang enthalten  
The hexagon socket screw to close the coolant hole on the face side is included with the delivery

Lieferumfang: ohne 4-Zahn-Wendeplatten, mit Spannschrauben  
Delivery: without 4-tooth indexable inserts, with clamping screws

**Achtung:** Beim Anziehen der Spannschraube ist das **empfohlene Anzugsdrehmoment von 5,0 Nm** zu beachten  
**Note:** When tightening the clamping screw, the **recommended tightening torque 5.0 Nm** must be used

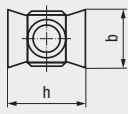


Aufnahmen und Verlängerungen für Gigant modular und Gigant modular sprinter siehe Seite 508 - 509  
Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 508 - 509

15

4-Zahn-Wendeplatten für Steigungsbereich bis 12 mm (4 Gg/1")

4-tooth indexable inserts for a pitch range up to 12 mm (4 tpi)

HM  
Carbide

RH + LH



Beschichtung · Coating

TIN

TiAlN-T4

Einsatzgebiete – Material  
Applications – material

» 358

P  
mmP  
Gg/1" (tpi)

b

h

P

1.1-5.1

M

1.1-4.1

K

1.1-4.2

N

1.1-5.3

S

1.1-2.6

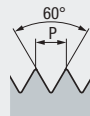
H

1.1-1.2

WP-Z4  
Gr.15  
TINWP-Z4  
Gr.15  
TiAlN-T4

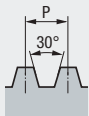
M, MF, UN

DIN 13, ASME B1.1

1,5 - 6  
6 - 816 - 4  
414,3  
14,328,58  
28,58GF643505.9514  
GF643505.9523GF643507.9514  
GF643507.9523

Tr

DIN 103

10  
1214,3  
14,328,58  
28,58 $\varnothing d_{1 \text{ min.}} = d_F + 101$   
 $\varnothing d_{1 \text{ min.}} = d_F + 122$ GF643507.9748  
GF643507.9749Zubehör  
AccessoriesErsatzschraube M5 x 18; Torx T20  
Spare screw M5 x 18; Torx T20

GZ349015

Schraubendreher Torx T20  
Screw driver Torx T20

GZ349025

Drehmoment-Schraubendreher Torx T20  
Torque screw driver Torx T20

GZ349045

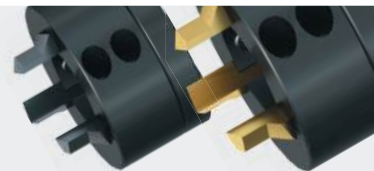
Hakenschlüssel mit Zapfen  
nach DIN 1810-B 68-75 mm  
Hook wrench type B with pin  
acc. to DIN 1810-B 68-75 mm

GZ349055

Verschluss-Schraube M24x1,5 x 25; SW12  
Screw plug M24x1.5 x 25; SW12

GZ359315

Andere Ausführungen auf Anfrage, z.B.  
Other designs upon request, e.g.ACME-Gewinde  
ACME threadRundgewinde  
Round threadSägewinde  
Buttress threadEinstechplatten in verschiedenen Ausführungen  
Infeed inserts in various designs



# 10-14

**Fräsringe zum Entfernen des unvollständigen Ganges**  
Milling rings for removal of the incomplete thread

### Gigant-ic

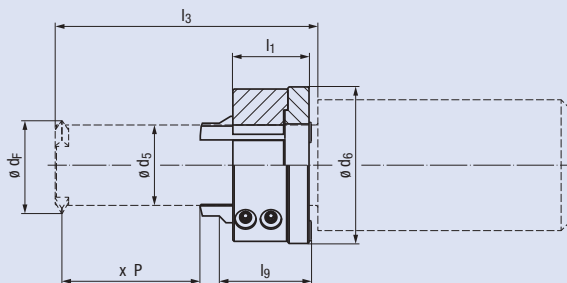
**Z3 - Z4**



| Größe<br>Size | ø d <sub>F</sub><br>mm | ø d <sub>5</sub> | ø d <sub>6</sub> | l <sub>1</sub> | l <sub>9</sub> | Z<br>(Inserts) |                        |
|---------------|------------------------|------------------|------------------|----------------|----------------|----------------|------------------------|
| 10            | 20,5                   | 15,9             | 33               | 18             | 23             | 3              | <b>GZ80F0C4.010040</b> |
| 11            | 23,85                  | 19               | 37               | 18             | 22             | 3              | <b>GZ80G0C4.011040</b> |
| 12            | 32,85                  | 24,5             | 47               | 22             | 24             | 3              | <b>GZ80H0C4.012060</b> |
| 13            | 40,25                  | 31               | 55               | 22             | 24             | 4              | <b>GZ80I0C4.013060</b> |
| 14            | 52,55                  | 41               | 65               | 22             | 23             | 4              | <b>GZ80J0C4.014060</b> |

Das Maß „x P“ muss ein Vielfaches der Steigung P des herzustellenden Gewindes sein  
The measurement “x P” must be a multiple of the pitch P of the thread to be produced

Die Nutztiefe l<sub>3</sub> des Zirkular-Gewindefräskörpers verringert sich um das Maß l<sub>9</sub>  
The usable depth l<sub>3</sub> of the circular thread milling body is reduced by dimension l<sub>9</sub>



**Fräsplatten für Fräsringe**  
Milling inserts for milling rings

**HM  
Carbide**

**RH + LH**



Beschichtung · Coating

**TIN**

**TIALN-T4**

Einsatzgebiete – Material  
Applications – material

» 358

|                  |                  |                  |
|------------------|------------------|------------------|
| <b>P</b> 1.1-5.1 | <b>M</b> 1.1-4.1 | <b>K</b> 1.1-4.2 |
| <b>N</b> 1.1-5.3 | <b>S</b> 1.1-2.6 | <b>H</b> 1.1-1.2 |

| Größe<br>Size | l <sub>1</sub> | t | FP<br>TIN       | FP<br>TIALN-T4  |
|---------------|----------------|---|-----------------|-----------------|
| 10            | 20             | 4 | <b>GF663005</b> | <b>GF663007</b> |
| 11            | 20             | 4 | <b>GF663105</b> | <b>GF663107</b> |
| 12            | 25             | 6 | <b>GF663205</b> | <b>GF663207</b> |
| 13            | 25             | 6 | <b>GF663305</b> | <b>GF663307</b> |
| 14            | 25             | 6 | <b>GF663405</b> | <b>GF663407</b> |





Product  
Finder $v_c / f_z$ 

M

MF

UNC  
UN, UNSUNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

**Gigant**

MoSys



# 10-15

Aufnahmen für Gigant modular  
Holders for Gigant modular



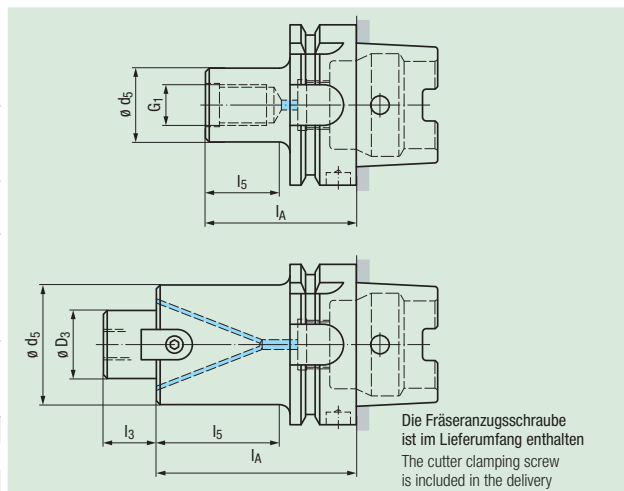
## HSK-A



| Größe<br>Size | $\emptyset d_5$ | $l_5$ | $l_A$ | $G_1$ | HSK     |                        |
|---------------|-----------------|-------|-------|-------|---------|------------------------|
| 10 - 12       | 29              | 29    | 59    | M16   | HSK-A63 | <b>GZ5391A4.116059</b> |



| Größe<br>Size | $\emptyset D_3$ | $\emptyset d_5$ | $l_3$ | $l_5$ | $l_A$ | HSK     |                        |
|---------------|-----------------|-----------------|-------|-------|-------|---------|------------------------|
| 13            | 27              | 48              | 21    | 131   | 160   | HSK-A63 | <b>GZ5391B4.270160</b> |
| 14            | 27              | 60              | 21    | 131   | 160   | HSK-A63 | <b>GZ5391B5.270160</b> |
| 15            | 32              | 78              | 24    | 171   | 200   | HSK-A63 | <b>GZ5391B4.320200</b> |



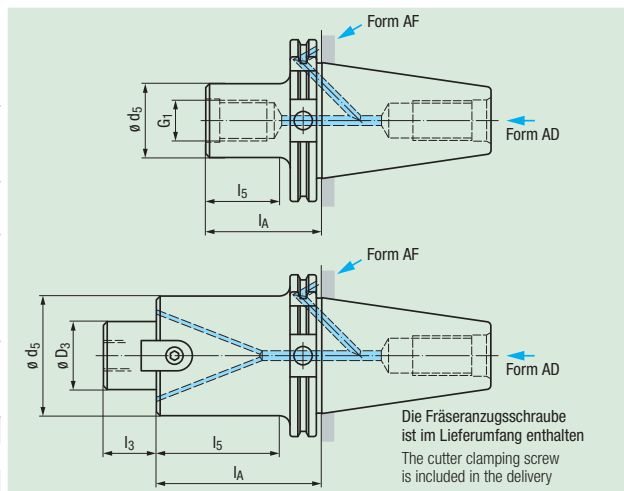
## SK (ISO)



| Größe<br>Size | $\emptyset d_5$ | $l_5$ | $l_A$ | $G_1$ | SK    |                        |
|---------------|-----------------|-------|-------|-------|-------|------------------------|
| 10 - 12       | 29              | 11    | 36    | M16   | SK 40 | <b>GZ5243A4.116036</b> |
| 10 - 12       | 29              | 11    | 36    | M16   | SK 50 | <b>GZ5263A4.116036</b> |



| Größe<br>Size | $\emptyset D_3$ | $\emptyset d_5$ | $l_3$ | $l_5$ | $l_A$ | SK    |                        |
|---------------|-----------------|-----------------|-------|-------|-------|-------|------------------------|
| 13            | 27              | 48              | 21    | 132   | 160   | SK 50 | <b>GZ5263B4.270160</b> |
| 14            | 27              | 60              | 21    | 132   | 160   | SK 50 | <b>GZ5263B5.270160</b> |
| 15            | 32              | 78              | 24    | 174   | 200   | SK 50 | <b>GZ5263B4.320200</b> |



Kühlschmierstoffrohre und Schlüssel für HSK-Schäfte  
Coolant tubes and wrenches for HSK shanks

742 - 743



Anzugsbolzen für Steilkegel  
Pull studs for ISO tapers

70



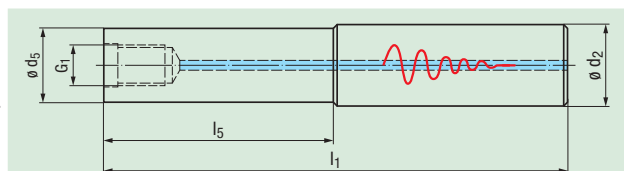
### HSS-Verlängerungen für Gigant modular

HSS extensions for Gigant modular

## $\emptyset 32$



| Größe<br>Size | $\emptyset d_2$<br>h6 | $\emptyset d_5$ | $l_1$ | $l_5$ | $G_1$ |                        |
|---------------|-----------------------|-----------------|-------|-------|-------|------------------------|
| 10 - 12       | 32                    | 29,4            | 200   | 108   | M16   | <b>GZ5521A4.320108</b> |



Schwingungsgedämpft, mit Hartmetall-Kern  
Special design for reduced vibration, with carbide core

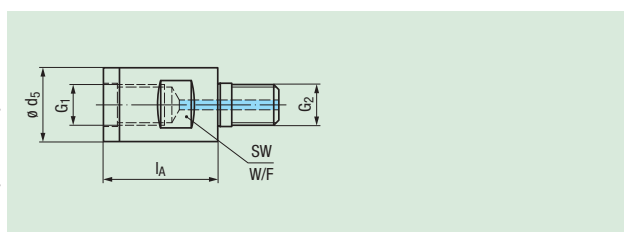
### Zwischenadapter für Gigant modular

Intermediate adapters for Gigant modular

## M16



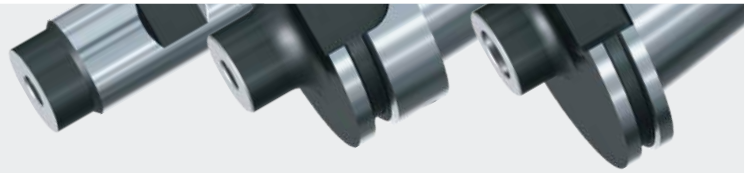
| Größe<br>Size | $\emptyset d_5$ | $l_A$ | $G_1$ | $G_2$ | SW<br>(W/F) |                        |
|---------------|-----------------|-------|-------|-------|-------------|------------------------|
| 10 - 12       | 29              | 40    | M16   | M16   | 22          | <b>GZ56E1A4.116040</b> |
| 10 - 12       | 29              | 90    | M16   | M16   | 22          | <b>GZ56E1A4.116090</b> |





## 10-15

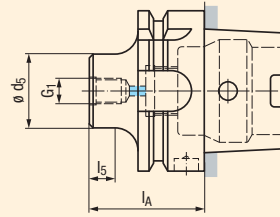
Aufnahmen für Gigant modular sprinter  
Holders for Gigant modular sprinter



HSK-A



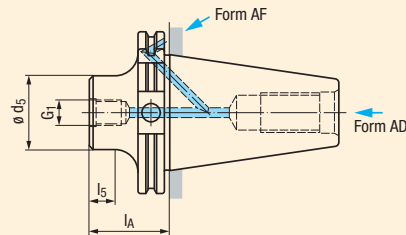
| Größe<br>Size | Ø d <sub>5</sub> | l <sub>5</sub> | l <sub>A</sub> | G <sub>1</sub> | HSK      |                        |
|---------------|------------------|----------------|----------------|----------------|----------|------------------------|
| 10            | 22,15            | 10             | 45             | M 8 x 1        | HSK-A63  | <b>GZ7391AA.251010</b> |
| 11            | 29,15            | 10             | 45             | M10 x 1        | HSK-A63  | <b>GZ7391AB.276010</b> |
| 12            | 37,65            | 12             | 45             | M12 x 1        | HSK-A63  | <b>GZ7391AC.301012</b> |
| 13            | 48               | 32             | 60             | M18 x 1,5      | HSK-A63  | <b>GZ7391AD.390032</b> |
| 14            | 60               | 40             | 80             | M24 x 1,5      | HSK-A100 | <b>GZ73A1AE.452040</b> |
| 15            | 78               | 45             | 76             | M24 x 1,5      | HSK-A100 | <b>GZ73A1AF.452045</b> |



SK (ISO)



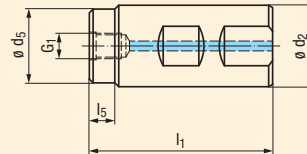
| Größe<br>Size | Ø d <sub>5</sub> | l <sub>5</sub> | l <sub>A</sub> | G <sub>1</sub> | SK    |                        |
|---------------|------------------|----------------|----------------|----------------|-------|------------------------|
| 10            | 22,15            | 10             | 35             | M 8 x 1        | SK 40 | <b>GZ7243AA.251010</b> |
| 11            | 29,15            | 10             | 35             | M10 x 1        | SK 40 | <b>GZ7243AB.276010</b> |
| 12            | 37,65            | 12             | 35             | M12 x 1        | SK 40 | <b>GZ7243AC.301012</b> |
| 13            | 48               | 15             | 37             | M18 x 1,5      | SK 40 | <b>GZ7243AD.390015</b> |
| 14            | 60               | 15             | 40             | M24 x 1,5      | SK 50 | <b>GZ7263AE.452015</b> |
| 15            | 78               | 20             | 45             | M24 x 1,5      | SK 50 | <b>GZ7263AF.452020</b> |



Ø25-Ø32



| Größe<br>Size | Ø d <sub>2</sub> | Ø d <sub>5</sub> | l <sub>1</sub> | l <sub>5</sub> | G <sub>1</sub> |                        |
|---------------|------------------|------------------|----------------|----------------|----------------|------------------------|
| 10            | 25               | 22,15            | 68             | 10             | M 8 x 1        | <b>GZ75D1AA.251010</b> |
| 11            | 32               | 29,15            | 72             | 10             | M10 x 1        | <b>GZ7521AB.276010</b> |
| 12            | 32               | 37,65            | 77             | 12             | M12 x 1        | <b>GZ7521AC.301012</b> |



Kühlschmierstoffrohre und Schlüssel für HSK-Schäfte  
Coolant tubes and wrenches for HSK shanks

» 742 - 743



Anzugsbolzen für Steilkegel  
Pull studs for ISO tapers

» 70

Product  
Finderv<sub>c</sub> / f<sub>z</sub>

M

MF

UNC

UN, UNS

UNF

UNEF

G, Rp

NPT, NPTF

Rc, W

BSW, BSF

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör

Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |

### „MoSys“ gestattet vielseitige Plan- und Stufensenkoperationen!

In einer Aufspannung erzielen Sie folgende Vorteile:

- Geringe Anzahl an Werkzeugen
- Wenig Lagerplätze und Lagerkosten
- Kurze Bearbeitungszeiten

„MoSys“ erfüllt folgende Voraussetzungen:

- Einfache Montage
- Hohe Steifigkeit
- Hohe Maßgenauigkeit
- Modular aufgebaut und einsetzbar

### “MoSys” makes a large number of counterbore and stepped bore operations possible!

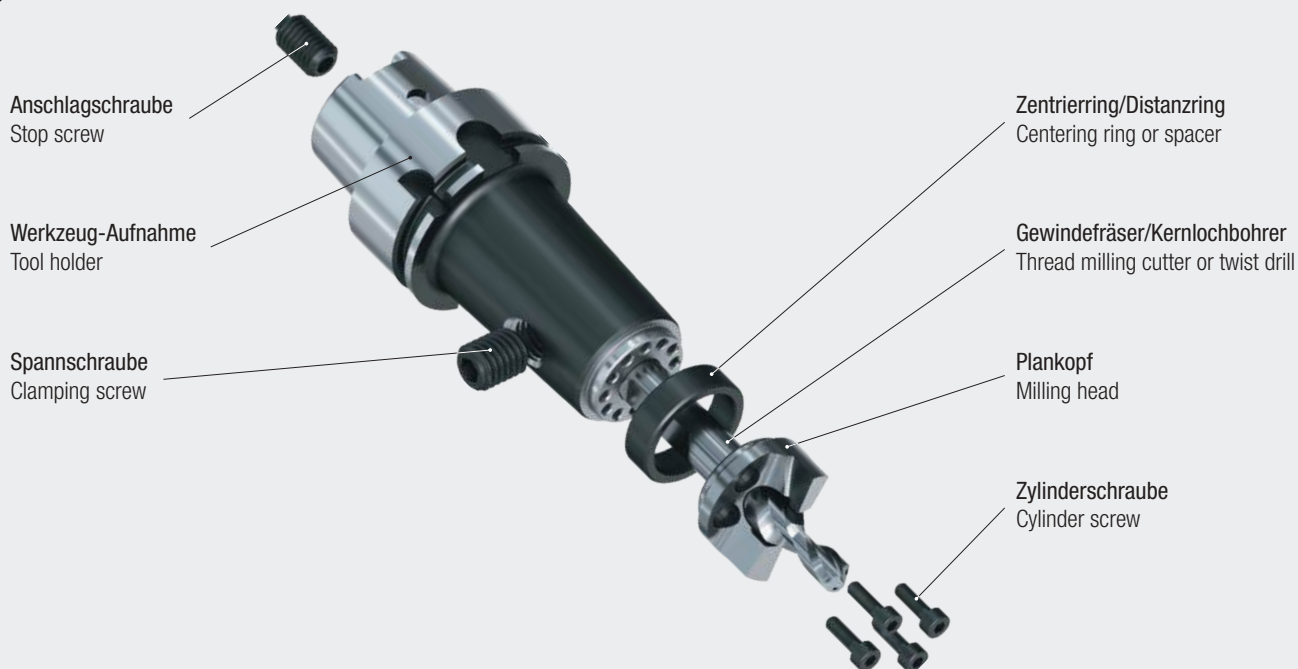
With just one clamping operation, you enjoy a number of advantages:

- Smaller tool quantities
- Fewer magazine places and reduced stocking costs
- Shorter machining times

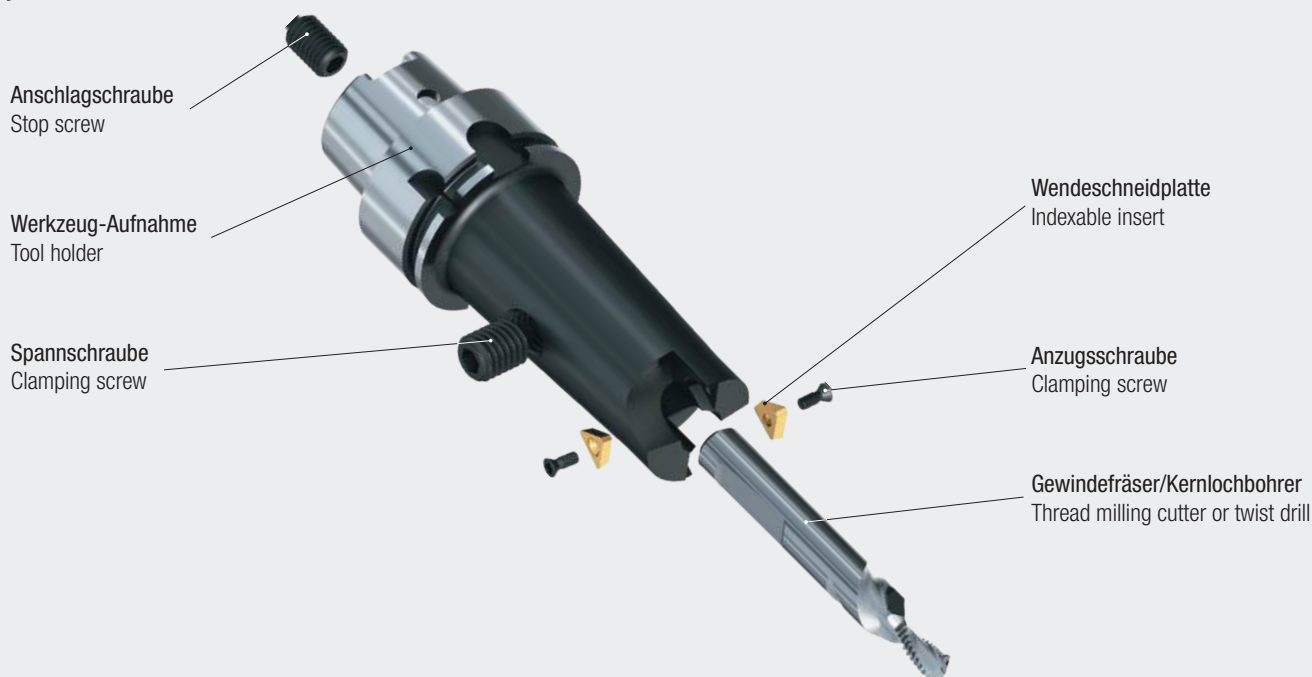
“MoSys” answers to the following requirements:

- Easy assembly
- High degree of rigidity
- High dimensional precision
- Modular construction for universal application

#### MoSys mit Vollhartmetall-Kopf MoSys with solid carbide head



#### MoSys mit Wendeschneidplatten MoSys with indexable inserts



Steilkegelschäfte  
ISO taper shanks



Kegel-Hohlschäfte  
Hollow taper shanks



Anschluss für Plankopf  
Connection for milling head



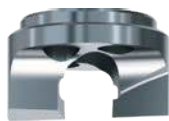
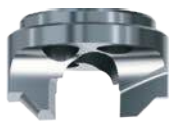
Anschluss für Wendeschneidplatten  
Connection for indexable inserts



Zentrierring  
Centering ring



Vollhartmetall-Planköpfe  
Solid carbide milling heads



Wendeschneidplatten  
zum Planen und Fasen  
Indexable inserts  
for plane milling and chamfering



Wendeschneidplatten  
zum Planen  
Indexable inserts  
for plane milling



Gewindefräser oder Spiralbohrer  
Thread milling cutters or twist drills



Product  
Finder

$v_c / f_z$

M

MF

UNC  
UN, UNS

UNF  
UNEF

G, Rp

NPT, NPTF  
Rc, W

BSW, BSF

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr

Zubehör  
Accessories

BGF

ZBGF

GSF

GF

GF-VZ

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



|                        |
|------------------------|
| Product Finder         |
| $v_c / f_z$            |
| M                      |
| MF                     |
| UNC<br>UN, UNS         |
| UNF<br>UNEF            |
| G, Rp                  |
| NPT, NPTF<br>Rc, W     |
| BSW, BSF               |
| Pg                     |
| MJ<br>UNJC, UNJF       |
| EG (STI)               |
| SELF-LOCK              |
| Tr                     |
| Zubehör<br>Accessories |
| BGF                    |
| ZBGF                   |
| GSF                    |
| GF                     |
| GF-VZ                  |
| GF-KEG                 |
| ZGF                    |
| ZIRK-GF                |
| Gigant                 |
| MoSys                  |



### Zur Angebotsausarbeitung werden folgende Daten benötigt:

- Werkstückzeichnung mit evtl. Störkontur
- Maschinenseitige Aufnahme mit Kühlschmierstoff-Übergabe
- Detaillierte Senkkontur
- Herzustellende Gewindeabmessung einschließlich Gewindetiefe
- Bohrungsform (Durchgangsloch, Grundloch)
- Kernlochdurchmesser (falls vorhanden)
- Zu bearbeitender Werkstoff

### For submitting an offer, we need the following information:

- Workpiece drawing with possible obstruction contours
- Shank connection on the machine side, with coolant supply
- Detailed countersink contour
- Size of the thread to be produced, including thread depth
- Type of hole (through hole or blind hole)
- Drilled hole diameter (if known)
- Workpiece material

#### Beispiel für Bearbeitung mit Vollhartmetall-Kopf

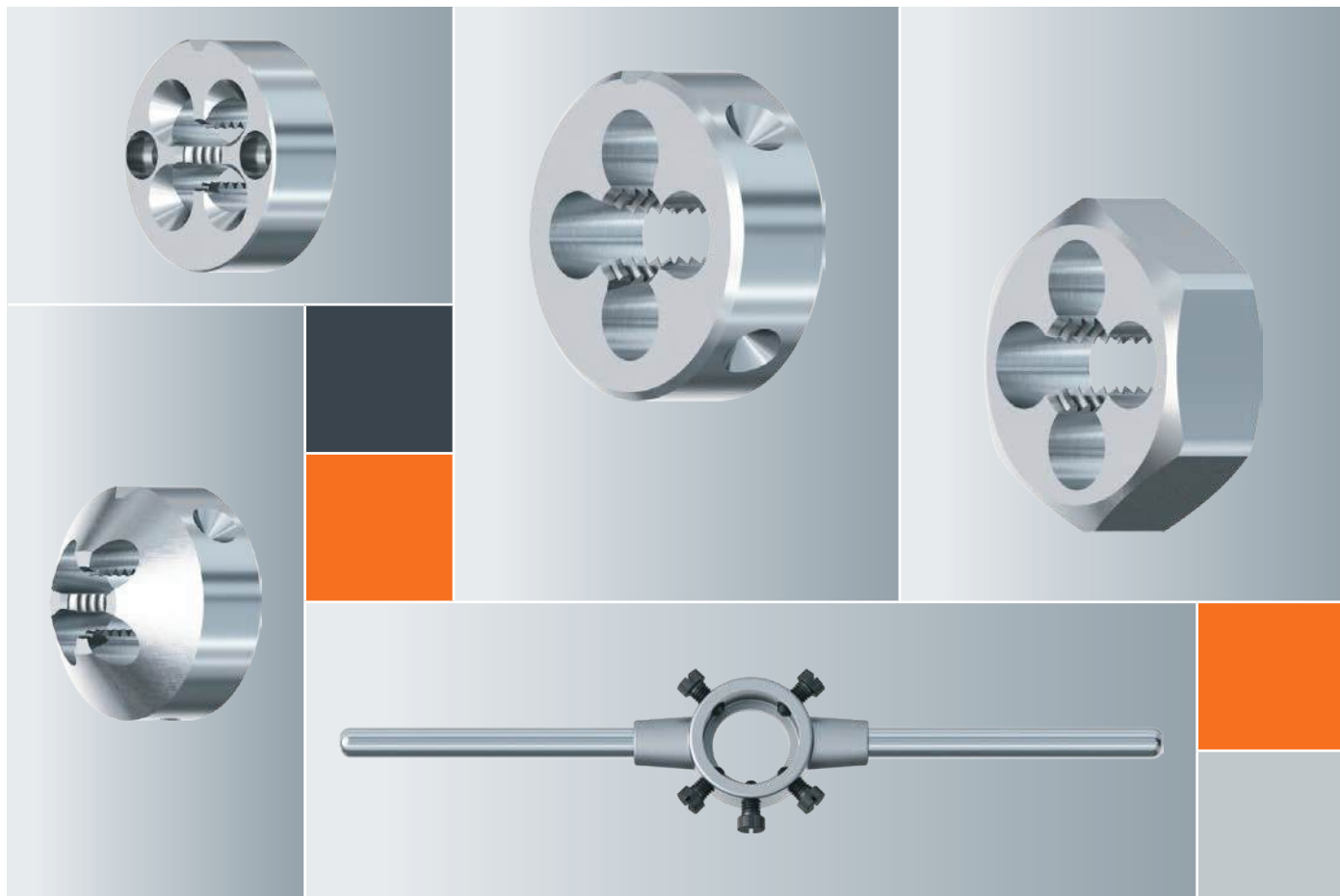
Example for machining with solid carbide head



#### Beispiel für Bearbeitung mit Wendeschneidplatten

Example for machining with indexable inserts





## Schneideisen Dies



Seite · Page

|                                      |                                             |           |
|--------------------------------------|---------------------------------------------|-----------|
| Übersicht                            | Contents                                    | 515       |
| Einsatzempfehlungen und Schnittwerte | Application recommendation and cutting data | 516 - 518 |
| Produktseiten                        | Product pages                               | 519 - 540 |

|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC                    |
| UNF<br>UNEF            |
| G                      |
| NPT, NPTF<br>R         |
| BSW, BSF               |
| Tr, Tr-F               |
| Zubehör<br>Accessories |



Runde  
Schneideisen  
Round  
dies



Automaten-  
Schneideisen  
Dies  
for automatic lathes



Glocken-  
Schneideisen  
Acorn  
dies



Sechskant-  
Schneideisen  
Hexagon  
dies



Product  
Finder

V<sub>c</sub>

M

MF

UNC

UNF  
UNEF

G

NPT, NPTF  
R

BSW, BSF

Tr, Tr-F

Zubehör  
Accessories

Seite · Page

520 - 522

523

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M

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MF

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UNC

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G (BSP)

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NPTF

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R (BSPT)

536

BSW

537

BSF

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Tr

539

Tr-F

Seite · Page



Schneideisenhalter  
Die stocks

540



Kühlschmierstoffe  
Coolant-lubricants

300 - 301





# Einsatzempfehlungen und Schnittwerte

## Bitte beachten:

Die in den jeweiligen Spalten angegebenen Schnittgeschwindigkeiten (v<sub>C</sub> in m/min) sind Richtwerte, welche je nach Einsatzbedingungen (Material, Schmierung, Maschine, usw.) angepasst werden müssen.

Die empfohlenen Schnittgeschwindigkeiten sind bezogen auf einen Gewinde- Nenndurchmesser von 10 mm.

 = Anschnittlänge

# Application recommendation and cutting data

## Please note:

The cutting speeds (v<sub>C</sub> in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.).

The recommended cutting speeds are related to a nominal thread diameter of 10 mm.

 = Chamfer length

Internationaler Werkstoffvergleich siehe Seite 764 - 785

International comparison of materials, see page 764 - 785

| Einsatzgebiete – Material<br>Applications – material |                                               |                                                                 |                                                                       | Material-Beispiele<br>Material examples | Material-Nummern<br>Material numbers                              |
|------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------------|
| P                                                    | <b>Stahlwerkstoffe</b>                        |                                                                 | <b>Steel materials</b>                                                |                                         |                                                                   |
|                                                      | 1.1                                           | Kaltfließpressstähle, Baustähle, Automatenstähle, u.a.          | Cold-extrusion steels, Construction steels, Free-cutting steels, etc. | ≤ 600 N/mm <sup>2</sup>                 | Cq15 1.1132<br>S235JR (St37-2) 1.0037<br>10SPb20 1.0722           |
|                                                      | 2.1                                           | Baustähle, Einsatzstähle, Stahlguss, u.a.                       | Construction steels, Cementation steels, Steel castings, etc.         | ≤ 800 N/mm <sup>2</sup>                 | E360 (St70-2) 1.0070<br>16MnCr5 1.7131<br>GS-25CrMo4 1.7218       |
|                                                      | 3.1                                           | Einsatzstähle, Vergütungsstähle, Kaltarbeitsstähle, u.a.        | Cementation steels, Heat-treatable steels, Cold work steels, etc.     | ≤ 1000 N/mm <sup>2</sup>                | 20MoCr3 1.7320<br>42CrMo4 1.7225<br>102Cr6 1.2067                 |
|                                                      | 4.1                                           | Vergütungsstähle, Kaltarbeitsstähle, Nitrierstähle, u.a.        | Heat-treatable steels, Cold work steels, Nitriding steels, etc.       | ≤ 1200 N/mm <sup>2</sup>                | 50CrMo4 1.7228<br>X45NiCrMo4 1.2767<br>31CrMo12 1.8515            |
| M                                                    | 5.1                                           | Hochlegierte Stähle, Kaltarbeitsstähle, Warmarbeitsstähle, u.a. | High-alloyed steels, Cold work steels, Hot work steels, etc.          | ≤ 1400 N/mm <sup>2</sup>                | X38CrMoV5-3 1.2367<br>X100CrMoV8-1-1 1.2990<br>X40CrMoV5-1 1.2344 |
|                                                      | <b>Nichtrostende Stahlwerkstoffe</b>          |                                                                 | <b>Stainless steel materials</b>                                      |                                         |                                                                   |
|                                                      | 1.1                                           | Ferritisch, martensitisch                                       | Ferritic, martensitic                                                 | ≤ 950 N/mm <sup>2</sup>                 | X2CrTi12 1.4512                                                   |
|                                                      | 2.1                                           | Austenitisch                                                    | Austenitic                                                            | ≤ 950 N/mm <sup>2</sup>                 | X6CrNiMoTi17-12-2 1.4571                                          |
|                                                      | 3.1                                           | Austenitisch-ferritisch (Duplex)                                | Austenitic-ferritic (Duplex)                                          | ≤ 1100 N/mm <sup>2</sup>                | X2CrNiMoN22-5-3 1.4462                                            |
| K                                                    | 4.1                                           | Austenitisch-ferritisch hitzebeständig (Super Duplex)           | Austenitic-ferritic heat-resistant (Super Duplex)                     | ≤ 1250 N/mm <sup>2</sup>                | X2CrNiMoN25-7-4 1.4410                                            |
|                                                      | <b>Gusswerkstoffe</b>                         |                                                                 | <b>Cast materials</b>                                                 |                                         |                                                                   |
|                                                      | 1.1                                           | Gusseisen mit Lamellengrafit (GJL)                              | Cast iron with lamellar graphite (GJL)                                | 100-250 N/mm <sup>2</sup>               | EN-GJL-200 (GG20) EN-JL-1030                                      |
|                                                      | 1.2                                           | Gusseisen mit Kugelgrafit (GJS)                                 | Cast iron with nodular graphite (GJS)                                 | 250-450 N/mm <sup>2</sup>               | EN-GJL-300 (GG30) EN-JL-1050                                      |
|                                                      | 2.1                                           | Gusseisen mit Kugelgrafit (GJS)                                 | Cast iron with nodular graphite (GJS)                                 | 350-500 N/mm <sup>2</sup>               | EN-GJS-400-15 (GGG40) EN-JS-1030                                  |
| N                                                    | 2.2                                           | Gusseisen mit Kugelgrafit (GJS)                                 | Cast iron with nodular graphite (GJS)                                 | 500-900 N/mm <sup>2</sup>               | EN-GJS-700-2 (GGG70) EN-JS-1070                                   |
|                                                      | 3.1                                           | Gusseisen mit Vermiculargrafit (GJV)                            | Cast iron with vermicular graphite (GJV)                              | 300-400 N/mm <sup>2</sup>               | GJV 300                                                           |
|                                                      | 3.2                                           | Gusseisen mit Vermiculargrafit (GJV)                            | Cast iron with vermicular graphite (GJV)                              | 400-500 N/mm <sup>2</sup>               | GJV 450                                                           |
|                                                      | 4.1                                           | Temperguss (GTMW, GTMB)                                         | Malleable cast iron (GTMW, GTMB)                                      | 250-500 N/mm <sup>2</sup>               | EN-GJMW-350-4 (GTW-35) EN-JM-1010                                 |
|                                                      | 4.2                                           | Temperguss (GTMW, GTMB)                                         | Malleable cast iron (GTMW, GTMB)                                      | 500-800 N/mm <sup>2</sup>               | EN-GJMB-450-6 (GTS-45) EN-JM-1140                                 |
| S                                                    | <b>Nichteisenwerkstoffe</b>                   |                                                                 | <b>Non ferrous materials</b>                                          |                                         |                                                                   |
|                                                      | <b>Aluminium-Legierungen</b>                  |                                                                 | <b>Aluminium alloys</b>                                               |                                         |                                                                   |
|                                                      | 1.1                                           | Aluminium-Knetlegierungen                                       | Aluminium wrought alloys                                              | ≤ 200 N/mm <sup>2</sup>                 | EN AW-AlMn1 EN AW-3103                                            |
|                                                      | 1.2                                           | Aluminium-Knetlegierungen                                       | Aluminium wrought alloys                                              | ≤ 350 N/mm <sup>2</sup>                 | EN AW-AlMgSi EN AW-6060                                           |
|                                                      | 1.3                                           | Aluminium-Knetlegierungen                                       | Aluminium wrought alloys                                              | ≤ 550 N/mm <sup>2</sup>                 | EN AW-AlZn5Mg3Cu EN AW-7022                                       |
| H                                                    | 1.4                                           | Aluminium-Gusslegierungen                                       | Aluminium cast alloys                                                 | Si ≤ 7%                                 | EN AC-AlMg5 EN AC-307 G                                           |
|                                                      | 1.5                                           | Aluminium-Gusslegierungen                                       | Aluminium cast alloys                                                 | 7% < Si ≤ 12%                           | EN AC-AISi9Cu3 EN AC-46500                                        |
|                                                      | 1.6                                           | Aluminium-Gusslegierungen                                       | Aluminium cast alloys                                                 | 12% < Si ≤ 17%                          | GD-AISI17Cu4FeMg                                                  |
|                                                      | <b>Kupfer-Legierungen</b>                     |                                                                 | <b>Copper alloys</b>                                                  |                                         |                                                                   |
|                                                      | 2.1                                           | Reinkupfer, niedriglegiertes Kupfer                             | Pure copper, low-alloyed copper                                       | ≤ 400 N/mm <sup>2</sup>                 | E-Cu 57 EN CW 004 A                                               |
| S                                                    | 2.2                                           | Kupfer-Zink-Legierungen (Messing, langspanend)                  | Copper-zinc alloys (brass, long-chipping)                             | ≤ 550 N/mm <sup>2</sup>                 | CuZn37 (Ms63) EN CW 508 L                                         |
|                                                      | 2.3                                           | Kupfer-Zink-Legierungen (Messing, kurzspanend)                  | Copper-zinc alloys (brass, short-chipping)                            | ≤ 550 N/mm <sup>2</sup>                 | CuZn36Pb3 (Ms58) EN CW 603 N                                      |
|                                                      | 2.4                                           | Kupfer-Aluminium-Legierungen (Alubronze, langspanend)           | Copper-aluminium alloys (alu bronze, long-chipping)                   | ≤ 800 N/mm <sup>2</sup>                 | CuAl10Ni5Fe4 EN CW 307 G                                          |
|                                                      | 2.5                                           | Kupfer-Zinn-Legierungen (Zinnbronze, langspanend)               | Copper-tin alloys (tin bronze, long-chipping)                         | ≤ 700 N/mm <sup>2</sup>                 | CuSn8P EN CW 459 K                                                |
|                                                      | 2.6                                           | Kupfer-Zinn-Legierungen (Zinnbronze, kurzspanend)               | Copper-tin alloys (tin bronze, short-chipping)                        | ≤ 400 N/mm <sup>2</sup>                 | CuSn7 ZnPb (Rg7) 2.1090                                           |
| H                                                    | 2.7                                           | Kupfer-Sonderlegierungen                                        | Special copper alloys                                                 | ≤ 600 N/mm <sup>2</sup>                 | (AMPCO® 8)                                                        |
|                                                      | 2.8                                           | Kupfer-Sonderlegierungen                                        | Special copper alloys                                                 | ≤ 1400 N/mm <sup>2</sup>                | (AMPCO® 45)                                                       |
|                                                      | <b>Magnesium-Legierungen</b>                  |                                                                 | <b>Magnesium alloys</b>                                               |                                         |                                                                   |
|                                                      | 3.1                                           | Magnesium-Knetlegierungen                                       | Magnesium wrought alloys                                              | ≤ 500 N/mm <sup>2</sup>                 | MgAl6Zn 3.5612                                                    |
|                                                      | 3.2                                           | Magnesium-Gusslegierungen                                       | Magnesium cast alloys                                                 | ≤ 500 N/mm <sup>2</sup>                 | EN-MCMgAl9Zn1 EN-MC21120                                          |
| S                                                    | <b>Kunststoffe</b>                            |                                                                 | <b>Synthetics</b>                                                     |                                         |                                                                   |
|                                                      | 4.1                                           | Duroplaste (kurzspanend)                                        | Duroplastics (short-chipping)                                         |                                         | Bakelit, Pertinax                                                 |
|                                                      | 4.2                                           | Thermoplaste (langspanend)                                      | Thermoplastics (long-chipping)                                        |                                         | PMMA, POM, PVC                                                    |
|                                                      | 4.3                                           | Faserverstärkte Kunststoffe (Faseranteil ≤ 30%)                 | Fibre-reinforced synthetics (fibre content ≤ 30%)                     |                                         | GFK, CFK, AFK                                                     |
|                                                      | 4.4                                           | Faserverstärkte Kunststoffe (Faseranteil > 30%)                 | Fibre-reinforced synthetics (fibre content > 30%)                     |                                         | GFK, CFK, AFK                                                     |
| S                                                    | <b>Besondere Werkstoffe</b>                   |                                                                 | <b>Special materials</b>                                              |                                         |                                                                   |
|                                                      | 5.1                                           | Grafit                                                          | Graphite                                                              |                                         | C 8000                                                            |
|                                                      | 5.2                                           | Wolfram-Kupfer-Legierungen                                      | Tungsten-copper alloys                                                |                                         | W-Cu 80/20                                                        |
|                                                      | 5.3                                           | Verbundwerkstoffe                                               | Composite materials                                                   |                                         | Hyllite, Alucobond                                                |
|                                                      | <b>Spezialwerkstoffe</b>                      |                                                                 | <b>Special materials</b>                                              |                                         |                                                                   |
| S                                                    | <b>Titan-Legierungen</b>                      |                                                                 | <b>Titanium alloys</b>                                                |                                         |                                                                   |
|                                                      | 1.1                                           | Reintitan                                                       | Pure titanium                                                         | ≤ 450 N/mm <sup>2</sup>                 | Ti1 3.7025                                                        |
|                                                      | 1.2                                           | Titan-Legierungen                                               | Titanium alloys                                                       | ≤ 900 N/mm <sup>2</sup>                 | TiAl6V4 3.7165                                                    |
|                                                      | 1.3                                           | Titan-Legierungen                                               | Titanium alloys                                                       | ≤ 1250 N/mm <sup>2</sup>                | TiAl4Mo4Sn2 3.7185                                                |
|                                                      | <b>Nickel-, Kobalt- und Eisen-Legierungen</b> |                                                                 | <b>Nickel alloys, cobalt alloys and iron alloys</b>                   |                                         |                                                                   |
| S                                                    | 2.1                                           | Reinnickel                                                      | Pure nickel                                                           | ≤ 600 N/mm <sup>2</sup>                 | Ni 99.6 2.4060                                                    |
|                                                      | 2.2                                           | Nickel-Basis-Legierungen                                        | Nickel-base alloys                                                    | ≤ 1000 N/mm <sup>2</sup>                | Monel 400 2.4360                                                  |
|                                                      | 2.3                                           | Nickel-Basis-Legierungen                                        | Nickel-base alloys                                                    | ≤ 1600 N/mm <sup>2</sup>                | Inconel 718 2.4668                                                |
|                                                      | 2.4                                           | Kobalt-Basis-Legierungen                                        | Cobalt-base alloys                                                    | ≤ 1000 N/mm <sup>2</sup>                | Udimet 605                                                        |
|                                                      | 2.5                                           | Kobalt-Basis-Legierungen                                        | Cobalt-base alloys                                                    | ≤ 1600 N/mm <sup>2</sup>                | Haynes 25 2.4964                                                  |
| H                                                    | 2.6                                           | Eisen-Basis-Legierungen                                         | Iron-base alloys                                                      | ≤ 1500 N/mm <sup>2</sup>                | Incoloy 800 1.4958                                                |
|                                                      | <b>Harte Werkstoffe</b>                       |                                                                 | <b>Hard materials</b>                                                 |                                         |                                                                   |
|                                                      | 1.1                                           | Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 44 - 50 HRC                             | Weldox 1100                                                       |
|                                                      | 1.2                                           | Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 50 - 55 HRC                             | Hardox 550                                                        |
|                                                      | 1.3                                           | Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 55 - 60 HRC                             | Armox 600T                                                        |
| H                                                    | 1.4                                           | Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 60 - 63 HRC                             | Ferro-Titanit                                                     |
|                                                      | 1.5                                           | Hochfeste Stähle, gehärtete Stähle, Hartguss                    | High strength steels, hardened steels, hard castings                  | 63 - 66 HRC                             | HSSE                                                              |



| EMUGE<br>—STEEL—                                                                  |                                                                                   | EMUGE<br>—VA—                                                                     |                                                                                   | EMUGE<br>—MS—                                                                      | EMUGE<br>—STEEL—                                                                    | <div>Product Finder</div> <div>V<sub>C</sub></div> <div>M</div> <div>MF</div> <div>UNC</div> <div>UNC<br/>UNEF</div> <div>G</div> <div>NPT, NPTF<br/>R</div> <div>BSW, BSF</div> <div>Tr, Tr-F</div> <div>Zubehör<br/>Accessories</div>                                           |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |  |  |  |  |                                                                                                                                                                                                                                                                                   |
| SE-B<br>nor<br>STEEL                                                              | SE-B<br>gel<br>STEEL                                                              | SE-B<br>nor<br>VA                                                                 | SE-B<br>gel<br>VA                                                                 | SE-B<br>gel<br>MS                                                                  | SE-AUT-LD<br>gel<br>STEEL                                                           |                                                                                                                                                                                                                                                                                   |
| 1,5                                                                               | 1,5                                                                               | 2                                                                                 | 2                                                                                 | 1                                                                                  | 1,5                                                                                 |                                                                                                                                                                                                                                                                                   |
| 520                                                                               | 520                                                                               | 521                                                                               | 521                                                                               | 522                                                                                | 523                                                                                 |                                                                                                                                                                                                                                                                                   |
| 526                                                                               | 526                                                                               | 527                                                                               | 527                                                                               |                                                                                    |                                                                                     |                                                                                                                                                                                                                                                                                   |
| 528                                                                               | 528                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                                                                                                                                                                                                                   |
| 529                                                                               | 529                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                                                                                                                                                                                                                   |
| 530                                                                               | 530                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                                                                                                                                                                                                                   |
| 531                                                                               | 531                                                                               |                                                                                   |                                                                                   | 531                                                                                |                                                                                     |                                                                                                                                                                                                                                                                                   |
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| 536                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |  <div>M</div> <div>MF</div> <div>UNC</div> <div>UNF</div> <div>UNEF</div> <div>G</div> <div>NPT</div> <div>NPTF</div> <div>R</div> <div>BSW</div> <div>BSF</div> <div>Tr</div> <div>Tr-F</div> |
| 537                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                                                                                                                                                                                                                   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                                                                                                                                                                                                                   |
| min. empf. max.<br>rec.                                                           | min. empf. max.<br>rec.                                                           | min. empf. max.<br>rec.                                                           | min. empf. max.<br>rec.                                                           | min. empf. max.<br>rec.                                                            | min. empf. max.<br>rec.                                                             |                                                                                                                                                                                                                                                                                   |
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| 1 5 8                                                                             | 1 5 8                                                                             | 1 5 8                                                                             | 1 5 8                                                                             |                                                                                    | 1 5 8                                                                               |                                                                                                                                                                                                                                                                                   |
| 1 3 5                                                                             | 1 3 5                                                                             | 1 3 5                                                                             | 1 3 5                                                                             |                                                                                    | 1 3 5                                                                               |                                                                                                                                                                                                                                                                                   |
| 1 2 3                                                                             | 1 2 3                                                                             | 1 2 3                                                                             | 1 2 3                                                                             |                                                                                    | 1 2 3                                                                               |                                                                                                                                                                                                                                                                                   |
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|                                                                                   | 1 2 4                                                                             | 1 2 4                                                                             | 1 2 4                                                                             |                                                                                    |                                                                                     |                                                                                                                                                                                                                                                                                   |
|                                                                                   | 1 2 4                                                                             | 1 2 4                                                                             | 1 2 4                                                                             |                                                                                    |                                                                                     |                                                                                                                                                                                                                                                                                   |
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| 2 5 10                                                                            | 2 5 10                                                                            |                                                                                   |                                                                                   |                                                                                    | 2 5 10                                                                              |                                                                                                                                                                                                                                                                                   |
| 2 5 10                                                                            | 2 5 10                                                                            |                                                                                   |                                                                                   |                                                                                    | 2 5 10                                                                              |                                                                                                                                                                                                                                                                                   |
| 2 5 10                                                                            | 2 5 10                                                                            |                                                                                   |                                                                                   |                                                                                    | 2 5 10                                                                              |                                                                                                                                                                                                                                                                                   |
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|                                                                                   | 10 15 20                                                                          |                                                                                   | 10 15 20                                                                          |                                                                                    | 10 15 20                                                                            |                                                                                                                                                                                                                                                                                   |
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|                                                                                   | 10 15 20                                                                          |                                                                                   | 10 15 20                                                                          |                                                                                    | 10 15 20                                                                            |                                                                                                                                                                                                                                                                                   |
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|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                                                                                                                                                                                                                   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                                                                                                                                                                                                                   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                                                                                                                                                                                                                   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                                                                                                                                                                                                                   |

|                        |     | EMUGE<br>STEEL                                                                    | EMUGE<br>MS                                                                       | EMUGE<br>STEEL                                                                    |     | EMUGE<br>STEEL                                                                      |        | EMUGE<br>STEEL                                                                      |
|------------------------|-----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------|
| Product Finder         |     |  |  |  | KEG |  | TRAPEZ |  |
| V <sub>c</sub>         |     |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
| M                      |     |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
| MF                     |     |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
| UNC                    |     |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
| UNF<br>UNEF            |     |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
| G                      |     |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
| NPT, NPTF<br>R         |     |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
| BSW, BSF               |     |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
| Tr, Tr-F               |     |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
| Zubehör<br>Accessories |     |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
| v <sub>c</sub> [m/min] |     | min. empf. max.<br>rec.                                                           | min. empf. max.<br>rec.                                                           | min. empf. max.<br>rec.                                                           |     | min. empf. max.<br>rec.                                                             |        | min. empf. max.<br>rec.                                                             |
| P                      | 1.1 | 1 5 8                                                                             |                                                                                   | 1 5 8                                                                             |     | 1 2 3                                                                               |        | 1 2 3 1)                                                                            |
|                        | 2.1 | 1 3 5                                                                             |                                                                                   | 1 3 5                                                                             |     | 1 3 5                                                                               |        |                                                                                     |
|                        | 3.1 | 1 2 3                                                                             |                                                                                   | 1 2 3                                                                             |     | 1 2 3                                                                               |        |                                                                                     |
|                        | 4.1 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 5.1 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
| M                      | 1.1 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 2.1 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 3.1 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 4.1 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
| K                      | 1.1 | 2 5 10                                                                            |                                                                                   | 2 5 10                                                                            |     | 1 3 5                                                                               |        |                                                                                     |
|                        | 1.2 | 2 5 10                                                                            |                                                                                   | 2 5 10                                                                            |     | 1 3 5                                                                               |        |                                                                                     |
|                        | 2.1 | 2 5 10                                                                            |                                                                                   | 2 5 10                                                                            |     | 1 3 5                                                                               |        |                                                                                     |
|                        | 2.2 | 2 5 10                                                                            |                                                                                   | 2 5 10                                                                            |     | 1 3 5                                                                               |        |                                                                                     |
|                        | 3.1 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 3.2 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 4.1 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 4.2 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        |     |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
| N                      | 1.1 | 10 15 20                                                                          |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 1.2 | 10 15 20                                                                          |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 1.3 | 10 15 20                                                                          |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 1.4 | 10 15 20                                                                          |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 1.5 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 1.6 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 2.1 | 10 15 20                                                                          |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 2.2 | 10 15 20                                                                          |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 2.3 |                                                                                   | 10 15 25                                                                          |                                                                                   |     | 1 3 5                                                                               |        | 1 2 3 1)                                                                            |
|                        | 2.4 | 1 5 8                                                                             |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 2.5 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 2.6 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 2.7 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 2.8 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 3.1 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 3.2 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 4.1 |                                                                                   | 10 15 25                                                                          |                                                                                   |     | 1 3 5                                                                               |        |                                                                                     |
|                        | 4.2 | 1 5 8                                                                             |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 4.3 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 4.4 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
| S                      | 1.1 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 1.2 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 1.3 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 2.1 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 2.2 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 2.3 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 2.4 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
| H                      | 1.1 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 1.2 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 1.3 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 1.4 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |
|                        | 1.5 |                                                                                   |                                                                                   |                                                                                   |     |                                                                                     |        |                                                                                     |

1) Nur zum Nachschneiden geeignet  
Suitable only for reconditioning

Product  
FinderV<sub>c</sub>

M

MF

UNC

UNF

UNEF

G

NPT, NPTF  
R

BSW, BSF

Tr, Tr-F

Zubehör  
Accessories

EMUGE bietet ein umfangreiches Programm an Gewindewalzrollen, Schneckenwalzrollen, Rändelrollen und Korbverzahnungsrollen für praktisch alle Bearbeitungsfälle.

EMUGE offers you a comprehensive programme of thread rolls, worm rolls, knurling rolls and serration rolls for practically all application cases.

### Verfahrensmerkmale:

- Spanloses Verfahren
- Außenbearbeitung
- Erzeugung der Profilkonturen durch Materialverdrängung
- Walzen-Grundwerkstoff ist hochlegierter Werkzeugstahl

### Voraussetzungen:

- Werkstoffe mit einer Bruchdehnung  $\geq 8\%$
- Speziell abgestimmte Vorarbeitsdurchmesser der Rohlinge zum Walzen erforderlich

### Vorteile:

- Rollglatte Oberflächen durch Gefügeverdichtung
- Oberflächengüte  $R_a 0,2$  am gewalzten Profil
- Höhere Korrosionsbeständigkeit durch kleinere Reaktionsflächen
- Ununterbrochener Faserverlauf
- Erhöhte statische und dynamische Festigkeit des Profils
- Hohe Form- und Maßgenauigkeit
- Erhebliche Werkstoffersparnis, da nicht vom Außendurchmesser des Werkstücks, sondern vom Flanken- bzw. Vorarbeitsdurchmesser ausgegangen wird
- Kurze Bearbeitungsdauer

**Somit können gewalzte Gewinde größeren Belastungen ausgesetzt werden. Sie besitzen höhere Verschleißfestigkeit und sind korrosionsbeständiger. Eine Steigerung der Wirtschaftlichkeit bei der Gewindeherstellung durch extrem kurze Fertigungszeiten ist ein weiterer Vorteil, der besondere Beachtung verdient.**

### Nachteile:

- Nicht vollständig ausgeformter Außendurchmesser
- Spezialmaschinen erforderlich

Für weitere Informationen kontaktieren Sie bitte den für Sie zuständigen Vertriebspartner.

### Process characteristics:

- Chipless process
- External machining
- Production of profile contours by material displacement
- Rolls made of high-alloyed tool steel

### Requirements:

- Workpiece materials with a breaking elongation  $\geq 8\%$
- Specially adjusted blank diameters are necessary for rolling

### Advantages:

- Smooth rolled surfaces achieved by densification of the material structure
- Surface quality grade  $R_a 0.2$  on the rolled profile
- Increased corrosion resistance due to reduced reaction surfaces
- Uninterrupted grain structure
- Increased static and dynamic strength of the profile
- High dimensional and form precision
- Considerable material savings, since work does not start from the major diameter of the workpiece but from its pitch, or preparatory diameter
- Short machining times

This means that rolled threads can better withstand stress: they show increased wear resistance, and are better protected against corrosion. Another advantage which deserves attention lies in the possibility of improving economic efficiency in thread production by the extremely short machining times which are common in thread rolling.

### Disadvantages:

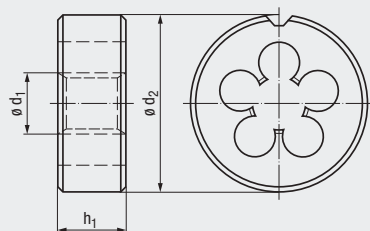
- Incompletely formed major diameter
- Special machines are necessary

For further information please get in touch with your sales contact.

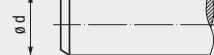


DIN 13

DIN EN  
22568



Vorarbeitsdurchmesser d ≈  
Preparatory diameter d ≈



STEEL  
Steel  
materials



normal  
standard



geläppt  
lapped



normal  
standard



normal  
standard



Toleranz · Tolerance

Schneidstoff · Cutting material

Technische Informationen  
Technical information



Einsatzgebiete – Material  
Applications – material

» 516

P 1.1-3.1  
K 1.1-2.2

P 1.1-3.1  
M 1.1-2.1  
K 1.1-2.2  
N 1.1-1.4  
N 2.1-2.4, 4.2

P 1.1-3.1  
K 1.1-2.2

P 1.1-3.1  
K 1.1-2.2

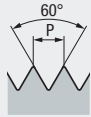
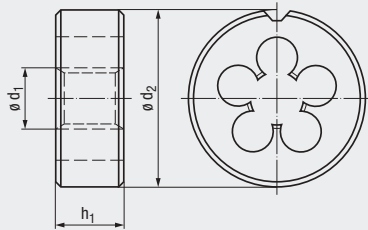
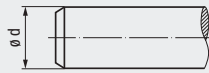
| ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>2</sub> | x | h <sub>1</sub> | 4h    | ø d ≈<br>6g | 6e    | SE-B<br>nor<br>STEEL | SE-B<br>gel<br>STEEL | SE-B<br>nor<br>STEEL | SE-B<br>nor<br>STEEL-LH |
|------------------------|---------|------------------|---|----------------|-------|-------------|-------|----------------------|----------------------|----------------------|-------------------------|
| <b>M</b> 1             | 0,25    | 16               | x | 5              | 0,98  | 0,97        | 0,93  | D0101000.0010        | D0101500.0010        |                      |                         |
| 1,1                    | 0,25    | 16               | x | 5              | 1,08  | 1,07        | 1,03  | D0101000.0011        | D0101500.0011        |                      |                         |
| 1,2                    | 0,25    | 16               | x | 5              | 1,18  | 1,17        | 1,13  | D0101000.0012        | D0101500.0012        |                      |                         |
| 1,4                    | 0,3     | 16               | x | 5              | 1,38  | 1,36        | 1,32  | D0101000.0014        | D0101500.0014        |                      |                         |
| 1,6                    | 0,35    | 16               | x | 5              | 1,57  | 1,54        | 1,51  | D0101000.0016        | D0101500.0016        |                      |                         |
| 1,7                    | 0,35    | 16               | x | 5              | 1,67  | 1,64        | 1,61  | D0101000.0017        | D0101500.0017        |                      |                         |
| 1,8                    | 0,35    | 16               | x | 5              | 1,77  | 1,74        | 1,71  | D0101000.0018        | D0101500.0018        |                      |                         |
| 2                      | 0,4     | 16               | x | 5              | 1,97  | 1,93        | 1,90  | D0101000.0020        | D0101500.0020        |                      |                         |
| 2,2                    | 0,45    | 16               | x | 5              | 2,16  | 2,13        | 2,10  | D0101000.0022        | D0101500.0022        | D0101030.0022        | D0101050.0022           |
| 2,3                    | 0,4     | 16               | x | 5              | 2,26  | 2,23        | 2,20  | D0101000.0023        | D0101500.0023        |                      | D0101050.0023           |
| 2,5                    | 0,45    | 16               | x | 5              | 2,46  | 2,43        | 2,40  | D0101000.0025        | D0101500.0025        | D0101030.0025        | D0101050.0025           |
| 2,6                    | 0,45    | 16               | x | 5              | 2,56  | 2,53        | 2,50  | D0101000.0026        | D0101500.0026        |                      | D0101050.0026           |
| 3                      | 0,5     | 20               | x | 5              | 2,96  | 2,92        | 2,89  | D0101000.0030        | D0101500.0030        | D0101030.0030        | D0101050.0030           |
| 3,5                    | 0,6     | 20               | x | 5              | 3,46  | 3,41        | 3,38  | D0101000.0035        | D0101500.0035        | D0101030.0035        | D0101050.0035           |
| 4                      | 0,7     | 20               | x | 5              | 3,95  | 3,90        | 3,87  | D0101000.0040        | D0101500.0040        | D0101030.0040        | D0101050.0040           |
| 4,5                    | 0,75    | 20               | x | 7              | 4,45  | 4,40        | 4,37  | D0101000.0045        | D0101500.0045        |                      |                         |
| 5                      | 0,8     | 20               | x | 7              | 4,95  | 4,90        | 4,86  | D0101000.0050        | D0101500.0050        | D0101030.0050        | D0101050.0050           |
| 6                      | 1       | 20               | x | 7              | 5,94  | 5,88        | 5,85  | D0101000.0060        | D0101500.0060        | D0101030.0060        | D0101050.0060           |
| 7                      | 1       | 25               | x | 9              | 6,94  | 6,88        | 6,85  | D0101000.0070        | D0101500.0070        | D0101030.0070        | D0101050.0070           |
| 8                      | 1,25    | 25               | x | 9              | 7,93  | 7,86        | 7,83  | D0101000.0080        | D0101500.0080        | D0101030.0080        | D0101050.0080           |
| 9                      | 1,25    | 25               | x | 9              | 8,93  | 8,86        | 8,83  | D0101000.0090        | D0101500.0090        |                      |                         |
| 10                     | 1,5     | 30               | x | 11             | 9,92  | 9,85        | 9,81  | D0101000.0100        | D0101500.0100        | D0101030.0100        | D0101050.0100           |
| 11                     | 1,5     | 30               | x | 11             | 10,92 | 10,85       | 10,81 | D0101000.0111        | D0101500.0111        |                      |                         |
| 12                     | 1,75    | 38               | x | 14             | 11,91 | 11,83       | 11,81 | D0101000.0112        | D0101500.0112        | D0101030.0112        | D0101050.0112           |
| 14                     | 2       | 38               | x | 14             | 13,91 | 13,82       | 13,78 | D0101000.0114        | D0101500.0114        | D0101030.0114        | D0101050.0114           |
| 16                     | 2       | 45               | x | 18             | 15,91 | 15,82       | 15,78 | D0101000.0116        | D0101500.0116        | D0101030.0116        | D0101050.0116           |
| 18                     | 2,5     | 45               | x | 18             | 17,89 | 17,79       | 17,75 | D0101000.0118        | D0101500.0118        |                      | D0101050.0118           |
| 20                     | 2,5     | 45               | x | 18             | 19,89 | 19,79       | 19,75 | D0101000.0120        | D0101500.0120        |                      | D0101050.0120           |
| 22                     | 2,5     | 55               | x | 22             | 21,89 | 21,79       | 21,75 | D0101000.0122        | D0101500.0122        |                      | D0101050.0122           |
| 24                     | 3       | 55               | x | 22             | 23,88 | 23,76       | 23,72 | D0101000.0124        | D0101500.0124        |                      | D0101050.0124           |
| 27                     | 3       | 65               | x | 25             | 26,88 | 26,76       | 26,72 | D0101000.0127        | D0101500.0127        |                      |                         |
| 30                     | 3,5     | 65               | x | 25             | 29,87 | 29,73       | 29,70 | D0101000.0130        | D0101500.0130        |                      |                         |
| 33                     | 3,5     | 65               | x | 25             | 32,87 | 32,73       | 32,70 | D0101000.0133        | D0101500.0133        |                      |                         |
| 36                     | 4       | 65               | x | 25             | 35,85 | 35,70       | 35,66 | D0101000.0136        | D0101500.0136        |                      |                         |
| 39                     | 4       | 75               | x | 30             | 38,85 | 38,70       | 38,66 | D0101000.0139        | D0101500.0139        |                      |                         |
| 42                     | 4,5     | 75               | x | 30             | 41,84 | 41,68       | 41,65 | D0101000.0142        | D0101500.0142        |                      |                         |
| 45                     | 4,5     | 90               | x | 36             | 44,84 | 44,68       | 44,65 | D0101000.0145        | D0101500.0145        |                      |                         |
| 48                     | 5       | 90               | x | 36             | 47,83 | 47,66       | 47,62 | D0101000.0148        | D0101500.0148        |                      |                         |
| 52                     | 5       | 90               | x | 36             | 51,83 | 51,66       | 51,62 | D0101000.0152        | D0101500.0152        |                      |                         |

<sup>\*)</sup> ≤ M1,4 Tol. 6h

Toleranzklasse 4h auf Anfrage  
Tolerance class 4h upon request

**M**

DIN 13

DIN EN  
22568Vorarbeitsdurchmesser  $d \approx$   
Preparatory diameter  $d \approx$ Technische Informationen  
Technical informationToleranz · Tolerance  
Schneidstoff · Cutting materialEinsatzgebiete – Material  
Applications – material

» 516

VA  
Stainless steel  
materialsnormal  
standardgeläpft  
lapped

6g

HSSE

2

E / O / P

6g

HSSE

2

E / O / P

P 1.1-3.1

M 1.1-2.1

P 1.1-3.1

M 1.1-2.1

N 1.1-1.4

N 2.1-2.2, 2.4

N 4.2

|   | $\varnothing d_1$<br>mm | P<br>mm | $\varnothing d_2$ | x | $h_1$ | $\varnothing d \approx$ |       |       | SE-B<br>nor<br>VA | SE-B<br>gel<br>VA |  |  |
|---|-------------------------|---------|-------------------|---|-------|-------------------------|-------|-------|-------------------|-------------------|--|--|
|   |                         |         |                   |   |       | 4h                      | 6g    | 6e    |                   |                   |  |  |
| M | 1                       | 0,25    | 16                | x | 5     | 0,98                    | 0,97  | 0,93  |                   |                   |  |  |
|   | 1,1                     | 0,25    | 16                | x | 5     | 1,08                    | 1,07  | 1,03  |                   |                   |  |  |
|   | 1,2                     | 0,25    | 16                | x | 5     | 1,18                    | 1,17  | 1,13  |                   |                   |  |  |
|   | 1,4                     | 0,3     | 16                | x | 5     | 1,38                    | 1,36  | 1,32  |                   |                   |  |  |
|   | 1,6                     | 0,35    | 16                | x | 5     | 1,57                    | 1,54  | 1,51  |                   |                   |  |  |
|   | 1,7                     | 0,35    | 16                | x | 5     | 1,67                    | 1,64  | 1,61  |                   |                   |  |  |
|   | 1,8                     | 0,35    | 16                | x | 5     | 1,77                    | 1,74  | 1,71  |                   |                   |  |  |
|   | 2                       | 0,4     | 16                | x | 5     | 1,97                    | 1,93  | 1,90  | D0103000.0020     | D0103500.0020     |  |  |
|   | 2,2                     | 0,45    | 16                | x | 5     | 2,16                    | 2,13  | 2,10  |                   |                   |  |  |
|   | 2,3                     | 0,4     | 16                | x | 5     | 2,26                    | 2,23  | 2,20  | D0103000.0023     | D0103500.0023     |  |  |
|   | 2,5                     | 0,45    | 16                | x | 5     | 2,46                    | 2,43  | 2,40  | D0103000.0025     | D0103500.0025     |  |  |
|   | 2,6                     | 0,45    | 16                | x | 5     | 2,56                    | 2,53  | 2,50  |                   |                   |  |  |
|   | 3                       | 0,5     | 20                | x | 5     | 2,96                    | 2,92  | 2,89  | D0103000.0030     | D0103500.0030     |  |  |
|   | 3,5                     | 0,6     | 20                | x | 5     | 3,46                    | 3,41  | 3,38  | D0103000.0035     | D0103500.0035     |  |  |
|   | 4                       | 0,7     | 20                | x | 5     | 3,95                    | 3,90  | 3,87  | D0103000.0040     | D0103500.0040     |  |  |
|   | 4,5                     | 0,75    | 20                | x | 7     | 4,45                    | 4,40  | 4,37  |                   |                   |  |  |
|   | 5                       | 0,8     | 20                | x | 7     | 4,95                    | 4,90  | 4,86  | D0103000.0050     | D0103500.0050     |  |  |
|   | 6                       | 1       | 20                | x | 7     | 5,94                    | 5,88  | 5,85  | D0103000.0060     | D0103500.0060     |  |  |
|   | 7                       | 1       | 25                | x | 9     | 6,94                    | 6,88  | 6,85  | D0103000.0070     | D0103500.0070     |  |  |
|   | 8                       | 1,25    | 25                | x | 9     | 7,93                    | 7,86  | 7,83  | D0103000.0080     | D0103500.0080     |  |  |
|   | 9                       | 1,25    | 25                | x | 9     | 8,93                    | 8,86  | 8,83  |                   |                   |  |  |
|   | 10                      | 1,5     | 30                | x | 11    | 9,92                    | 9,85  | 9,81  | D0103000.0100     | D0103500.0100     |  |  |
|   | 11                      | 1,5     | 30                | x | 11    | 10,92                   | 10,85 | 10,81 |                   |                   |  |  |
|   | 12                      | 1,75    | 38                | x | 14    | 11,91                   | 11,83 | 11,81 | D0103000.0112     | D0103500.0112     |  |  |
|   | 14                      | 2       | 38                | x | 14    | 13,91                   | 13,82 | 13,78 | D0103000.0114     | D0103500.0114     |  |  |
|   | 16                      | 2       | 45                | x | 18    | 15,91                   | 15,82 | 15,78 | D0103000.0116     | D0103500.0116     |  |  |
|   | 18                      | 2,5     | 45                | x | 18    | 17,89                   | 17,79 | 17,75 | D0103000.0118     | D0103500.0118     |  |  |
|   | 20                      | 2,5     | 45                | x | 18    | 19,89                   | 19,79 | 19,75 | D0103000.0120     | D0103500.0120     |  |  |
|   | 22                      | 2,5     | 55                | x | 22    | 21,89                   | 21,79 | 21,75 | D0103000.0122     | D0103500.0122     |  |  |
|   | 24                      | 3       | 55                | x | 22    | 23,88                   | 23,76 | 23,72 | D0103000.0124     | D0103500.0124     |  |  |
|   | 27                      | 3       | 65                | x | 25    | 26,88                   | 26,76 | 26,72 | D0103000.0127     | D0103500.0127     |  |  |
|   | 30                      | 3,5     | 65                | x | 25    | 29,87                   | 29,73 | 29,70 | D0103000.0130     | D0103500.0130     |  |  |
|   | 33                      | 3,5     | 65                | x | 25    | 32,87                   | 32,73 | 32,70 |                   |                   |  |  |
|   | 36                      | 4       | 65                | x | 25    | 35,85                   | 35,70 | 35,66 |                   |                   |  |  |
|   | 39                      | 4       | 75                | x | 30    | 38,85                   | 38,70 | 38,66 |                   |                   |  |  |
|   | 42                      | 4,5     | 75                | x | 30    | 41,84                   | 41,68 | 41,65 |                   |                   |  |  |
|   | 45                      | 4,5     | 90                | x | 36    | 44,84                   | 44,68 | 44,65 |                   |                   |  |  |
|   | 48                      | 5       | 90                | x | 36    | 47,83                   | 47,66 | 47,62 |                   |                   |  |  |
|   | 52                      | 5       | 90                | x | 36    | 51,83                   | 51,66 | 51,62 |                   |                   |  |  |

Schnellwechsel-Einsätze für  
runde Schneideisen Typ EM-SE  
siehe Seite 737Quick-change adapters for  
round dies type EM-SE,  
see page 737



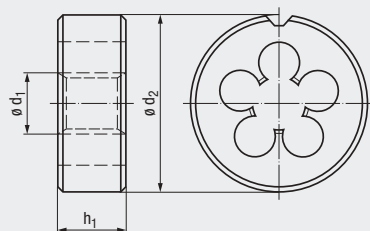
DIN 13

DIN EN  
22568

MS  
Copper-zinc  
alloys



geläppt  
lapped



Vorarbeitsdurchmesser d ≈  
Preparatory diameter d ≈



Toleranz · Tolerance

Schneidstoff · Cutting material

Technische Informationen  
Technical information



6g

HSS

1

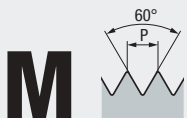
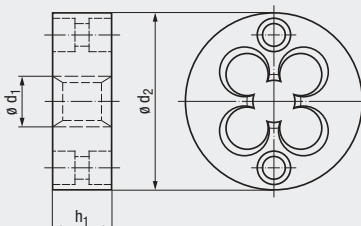
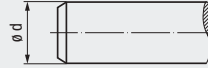
E / O

N 2.3, 4.1

Einsatzgebiete – Material  
Applications – material

» 516

| ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>2</sub> | x  | h <sub>1</sub> | ø d ≈ |       |       | SE-B<br>gel<br>MS |               |  |  |
|------------------------|---------|------------------|----|----------------|-------|-------|-------|-------------------|---------------|--|--|
|                        |         |                  |    |                | 4h    | 6g    | 6e    |                   |               |  |  |
| <b>M</b>               | 1       | 0,25             | 16 | x              | 5     | 0,98  | 0,97  | 0,93              |               |  |  |
|                        | 1,1     | 0,25             | 16 | x              | 5     | 1,08  | 1,07  | 1,03              |               |  |  |
|                        | 1,2     | 0,25             | 16 | x              | 5     | 1,18  | 1,17  | 1,13              |               |  |  |
|                        | 1,4     | 0,3              | 16 | x              | 5     | 1,38  | 1,36  | 1,32              |               |  |  |
|                        | 1,6     | 0,35             | 16 | x              | 5     | 1,57  | 1,54  | 1,51              |               |  |  |
|                        | 1,7     | 0,35             | 16 | x              | 5     | 1,67  | 1,64  | 1,61              |               |  |  |
|                        | 1,8     | 0,35             | 16 | x              | 5     | 1,77  | 1,74  | 1,71              |               |  |  |
|                        | 2       | 0,4              | 16 | x              | 5     | 1,97  | 1,93  | 1,90              | D0102500.0020 |  |  |
|                        | 2,2     | 0,45             | 16 | x              | 5     | 2,16  | 2,13  | 2,10              | D0102500.0022 |  |  |
|                        | 2,3     | 0,4              | 16 | x              | 5     | 2,26  | 2,23  | 2,20              | D0102500.0023 |  |  |
|                        | 2,5     | 0,45             | 16 | x              | 5     | 2,46  | 2,43  | 2,40              | D0102500.0025 |  |  |
|                        | 2,6     | 0,45             | 16 | x              | 5     | 2,56  | 2,53  | 2,50              | D0102500.0026 |  |  |
|                        | 3       | 0,5              | 20 | x              | 5     | 2,96  | 2,92  | 2,89              | D0102500.0030 |  |  |
|                        | 3,5     | 0,6              | 20 | x              | 5     | 3,46  | 3,41  | 3,38              | D0102500.0035 |  |  |
|                        | 4       | 0,7              | 20 | x              | 5     | 3,95  | 3,90  | 3,87              | D0102500.0040 |  |  |
|                        | 4,5     | 0,75             | 20 | x              | 7     | 4,45  | 4,40  | 4,37              |               |  |  |
|                        | 5       | 0,8              | 20 | x              | 7     | 4,95  | 4,90  | 4,86              | D0102500.0050 |  |  |
|                        | 6       | 1                | 20 | x              | 7     | 5,94  | 5,88  | 5,85              | D0102500.0060 |  |  |
|                        | 7       | 1                | 25 | x              | 9     | 6,94  | 6,88  | 6,85              | D0102500.0070 |  |  |
|                        | 8       | 1,25             | 25 | x              | 9     | 7,93  | 7,86  | 7,83              | D0102500.0080 |  |  |
|                        | 9       | 1,25             | 25 | x              | 9     | 8,93  | 8,86  | 8,83              |               |  |  |
|                        | 10      | 1,5              | 30 | x              | 11    | 9,92  | 9,85  | 9,81              | D0102500.0100 |  |  |
|                        | 11      | 1,5              | 30 | x              | 11    | 10,92 | 10,85 | 10,81             |               |  |  |
|                        | 12      | 1,75             | 38 | x              | 14    | 11,91 | 11,83 | 11,81             | D0102500.0112 |  |  |
|                        | 14      | 2                | 38 | x              | 14    | 13,91 | 13,82 | 13,78             | D0102500.0114 |  |  |
|                        | 16      | 2                | 45 | x              | 18    | 15,91 | 15,82 | 15,78             | D0102500.0116 |  |  |
|                        | 18      | 2,5              | 45 | x              | 18    | 17,89 | 17,79 | 17,75             | D0102500.0118 |  |  |
|                        | 20      | 2,5              | 45 | x              | 18    | 19,89 | 19,79 | 19,75             | D0102500.0120 |  |  |
|                        | 22      | 2,5              | 55 | x              | 22    | 21,89 | 21,79 | 21,75             |               |  |  |
|                        | 24      | 3                | 55 | x              | 22    | 23,88 | 23,76 | 23,72             |               |  |  |
|                        | 27      | 3                | 65 | x              | 25    | 26,88 | 26,76 | 26,72             |               |  |  |
|                        | 30      | 3,5              | 65 | x              | 25    | 29,87 | 29,73 | 29,70             |               |  |  |
|                        | 33      | 3,5              | 65 | x              | 25    | 32,87 | 32,73 | 32,70             |               |  |  |
|                        | 36      | 4                | 65 | x              | 25    | 35,85 | 35,70 | 35,66             |               |  |  |
|                        | 39      | 4                | 75 | x              | 30    | 38,85 | 38,70 | 38,66             |               |  |  |
|                        | 42      | 4,5              | 75 | x              | 30    | 41,84 | 41,68 | 41,65             |               |  |  |
|                        | 45      | 4,5              | 90 | x              | 36    | 44,84 | 44,68 | 44,65             |               |  |  |
|                        | 48      | 5                | 90 | x              | 36    | 47,83 | 47,66 | 47,62             |               |  |  |
|                        | 52      | 5                | 90 | x              | 36    | 51,83 | 51,66 | 51,62             |               |  |  |

| <div> <div>  <p><b>M</b><br/>DIN 13</p> </div> <div> <p>beidseitig verwendbar<br/>to be used from both sides</p> <p>Type<br/>LD</p> </div> </div>                                                                                                                                                                                                                                                                      |         |                  |   |                |       |       |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------|---|----------------|-------|-------|-------|
| <div> <div>  <p>Vorarbeitsdurchmesser d ≈<br/>Preparatory diameter d ≈</p>  </div> <div> <p>STEEL<br/>Steel materials</p>  <p>geläppt<br/>lapped</p>  </div> </div> |         |                  |   |                |       |       |       |
| <div> <div> <p>Technische Informationen<br/>Technical information</p> </div> <div> <p>Toleranz · Tolerance<br/>Schneidstoff · Cutting material</p>  </div> </div>                                                                                                                                                                                                                                                     |         |                  |   |                |       |       |       |
| <div> <div> <p>Einsatzgebiete – Material<br/>Applications – material</p> <p>» 516</p> </div> <div> <p>6g <sup>*)</sup><br/>HSS</p> <p>1,5<br/>E / O</p> <p>P 1.1-3.1<br/>K 1.1-2.2<br/>N 1.1-1.4<br/>N 2.1-2.2, 2.4<br/>N 4.2</p> </div> </div>                                                                                                                                                                                                                                                        |         |                  |   |                |       |       |       |
| <div> <div> <p>SE-AUT-LD<br/>gel<br/>STEEL</p> </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                           |         |                  |   |                |       |       |       |
| ø d <sub>1</sub><br>mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | P<br>mm | ø d <sub>2</sub> | x | h <sub>1</sub> | 4h    | 6g    | 6e    |
| M 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0,25    | 16               | x | 2              | 0,98  | 0,97  | 0,93  |
| 1,1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0,25    | 16               | x | 2              | 1,08  | 1,07  | 1,03  |
| 1,2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0,25    | 16               | x | 2              | 1,18  | 1,17  | 1,13  |
| 1,4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0,3     | 16               | x | 2,6            | 1,38  | 1,36  | 1,32  |
| 1,6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0,35    | 16               | x | 2,6            | 1,57  | 1,54  | 1,51  |
| 1,7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0,35    | 16               | x | 2,6            | 1,67  | 1,64  | 1,61  |
| 1,8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0,35    | 16               | x | 2,6            | 1,77  | 1,74  | 1,71  |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0,4     | 16               | x | 3,5            | 1,97  | 1,93  | 1,90  |
| 2,2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0,45    | 16               | x | 3,5            | 2,17  | 2,13  | 2,10  |
| 2,3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0,4     | 16               | x | 3,5            | 2,27  | 2,23  | 2,20  |
| 2,5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0,45    | 16               | x | 3,5            | 2,47  | 2,43  | 2,40  |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0,5     | 16               | x | 3,5            | 2,97  | 2,92  | 2,89  |
| 3,5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0,6     | 16               | x | 4              | 3,46  | 3,41  | 3,38  |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0,7     | 16               | x | 5              | 3,96  | 3,90  | 3,87  |
| 4,5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0,75    | 20               | x | 7              | 4,46  | 4,40  | 4,37  |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0,8     | 20               | x | 7              | 4,95  | 4,90  | 4,86  |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1       | 20               | x | 7              | 5,94  | 5,88  | 5,85  |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1       | 25               | x | 7              | 6,94  | 6,88  | 6,85  |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1,25    | 25               | x | 9              | 7,93  | 7,86  | 7,83  |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1,5     | 30               | x | 11             | 9,92  | 9,85  | 9,81  |
| 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1,75    | 35               | x | 12             | 11,91 | 11,83 | 11,81 |
| 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2       | 35               | x | 14             | 13,91 | 13,82 | 13,78 |
| 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2       | 45               | x | 18             | 15,91 | 15,82 | 15,78 |

<sup>\*)</sup> ≤ M1,4 Tol. 6h

Product  
Finder

V<sub>c</sub>

M

MF

UNC

UNF  
UNEF

G

NPT, NPTF  
R

BSW, BSF

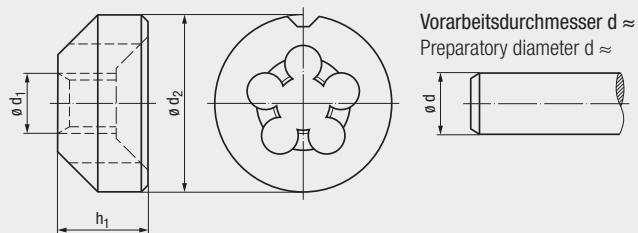
Tr, Tr-F

Zubehör  
Accessories






M  
DIN 13



Vorarbeitsdurchmesser  $d \approx$   
Preparatory diameter  $d \approx$

**STEEL**  
Steel  
materials



geläppt  
lapped



Technische Informationen  
Technical information

Toleranz · Tolerance  
Schneidstoff · Cutting material



6g

HSS

1

E / O

Einsatzgebiete – Material  
Applications – material

» 516

**P** 1.1-3.1  
**K** 1.1-2.2  
**N** 1.1-1.4  
**N** 2.1-2.2, 2.4  
**N** 4.2

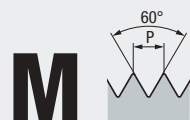
|          | $\varnothing d_1$<br>mm | P<br>mm | $\varnothing d_2$ | x | $h_1$ | $\varnothing d \approx$ |      |      | SE-GLOCK<br>gel<br>STEEL |  |  |
|----------|-------------------------|---------|-------------------|---|-------|-------------------------|------|------|--------------------------|--|--|
|          |                         |         |                   |   |       | 4h                      | 6g   | 6e   |                          |  |  |
| <b>M</b> | 2                       | 0,4     | 16                | x | 8     | 1,97                    | 1,93 | 1,90 | D0301500.0020            |  |  |
|          | 2,5                     | 0,45    | 16                | x | 8     | 2,47                    | 2,43 | 2,40 | D0301500.0025            |  |  |
|          | 3                       | 0,5     | 16                | x | 8     | 2,97                    | 2,92 | 2,89 | D0301500.0030            |  |  |
|          | 3,5                     | 0,6     | 16                | x | 9,5   | 3,46                    | 3,41 | 3,38 | D0301500.0035            |  |  |
|          | 4                       | 0,7     | 16                | x | 9,5   | 3,96                    | 3,90 | 3,87 | D0301500.0040            |  |  |
|          | 5                       | 0,8     | 20                | x | 9,5   | 4,95                    | 4,90 | 4,86 | D0301500.0050            |  |  |
|          | 6                       | 1       | 20                | x | 9,5   | 5,94                    | 5,88 | 5,85 | D0301500.0060            |  |  |
|          | 8                       | 1,25    | 25                | x | 14    | 7,93                    | 7,86 | 7,83 | D0301500.0080            |  |  |



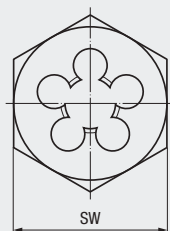
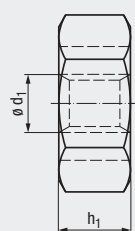
Kühlschmierstoffe siehe Seite 300 - 301

Coolant-lubricants, see page 300 - 301





DIN 13



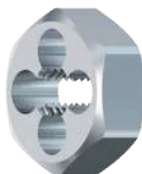
Vorarbeitsdurchmesser  $d \approx$   
Preparatory diameter  $d \approx$



**STEEL**  
Steel  
materials



normal  
standard



Technische Informationen  
Technical information

Toleranz · Tolerance  
Schneidstoff · Cutting material



6g

HSS

1,5

E / O

Einsatzgebiete – Material  
Applications – material

» 516

**P** 1.1-3.1

**K** 1.1-2.2

|          | $\varnothing d_1$<br>mm | P<br>mm | SW | x | $h_1$ | $\varnothing d \approx$ |       |       | SE-6KT<br>nor<br>STEEL |  |  |  |
|----------|-------------------------|---------|----|---|-------|-------------------------|-------|-------|------------------------|--|--|--|
|          |                         |         |    |   |       | 4h                      | 6g    | 6e    |                        |  |  |  |
| <b>M</b> | 3                       | 0,5     | 18 | x | 5     | 2,97                    | 2,92  | 2,89  | D0401000.0030          |  |  |  |
|          | 3,5                     | 0,6     | 18 | x | 5     | 3,46                    | 3,41  | 3,38  | D0401000.0035          |  |  |  |
|          | 4                       | 0,7     | 18 | x | 5     | 3,96                    | 3,90  | 3,87  | D0401000.0040          |  |  |  |
|          | 5                       | 0,8     | 18 | x | 7     | 4,95                    | 4,90  | 4,86  | D0401000.0050          |  |  |  |
|          | 6                       | 1       | 18 | x | 7     | 5,94                    | 5,88  | 5,85  | D0401000.0060          |  |  |  |
|          | 7                       | 1       | 21 | x | 9     | 6,94                    | 6,88  | 6,85  | D0401000.0070          |  |  |  |
|          | 8                       | 1,25    | 21 | x | 9     | 7,93                    | 7,86  | 7,83  | D0401000.0080          |  |  |  |
|          | 10                      | 1,5     | 27 | x | 11    | 9,92                    | 9,85  | 9,81  | D0401000.0100          |  |  |  |
|          | 12                      | 1,75    | 36 | x | 14    | 11,91                   | 11,83 | 11,81 | D0401000.0112          |  |  |  |
|          | 14                      | 2       | 36 | x | 14    | 13,91                   | 13,82 | 13,78 | D0401000.0114          |  |  |  |
|          | 16                      | 2       | 41 | x | 18    | 15,91                   | 15,82 | 15,78 | D0401000.0116          |  |  |  |
|          | 18                      | 2,5     | 41 | x | 18    | 17,89                   | 17,79 | 17,75 | D0401000.0118          |  |  |  |
|          | 20                      | 2,5     | 41 | x | 18    | 19,89                   | 19,79 | 19,75 | D0401000.0120          |  |  |  |
|          | 22                      | 2,5     | 50 | x | 22    | 21,89                   | 21,79 | 21,75 | D0401000.0122          |  |  |  |
|          | 24                      | 3       | 50 | x | 22    | 23,88                   | 23,76 | 23,72 | D0401000.0124          |  |  |  |
|          | 27                      | 3       | 60 | x | 25    | 26,88                   | 26,76 | 26,72 | D0401000.0127          |  |  |  |
|          | 30                      | 3,5     | 60 | x | 25    | 29,87                   | 29,73 | 29,70 | D0401000.0130          |  |  |  |
|          | 33                      | 3,5     | 60 | x | 25    | 32,87                   | 32,73 | 32,70 | D0401000.0133          |  |  |  |
|          | 36                      | 4       | 60 | x | 25    | 35,85                   | 35,70 | 35,66 | D0401000.0136          |  |  |  |

Product  
FinderV<sub>C</sub>

M

MF

UNC

UNF  
UNEF

G

NPT, NPTF  
R

BSW, BSF

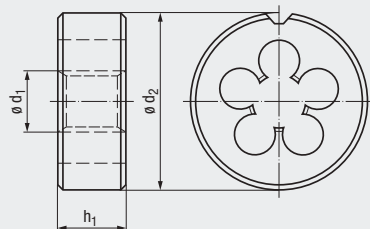
Tr, Tr-F

Zubehör  
Accessories

# MF

DIN 13

DIN EN  
22568



Vorarbeitsdurchmesser d ≈  
Preparatory diameter d ≈



STEEL  
Steel  
materials



normal  
standard



geläppt  
lapped



normal  
standard



normal  
standard



Toleranz · Tolerance  
Schneidstoff · Cutting material

Technische Informationen  
Technical information



Einsatzgebiete – Material  
Applications – material

» 516

P 1.1-3.1  
K 1.1-2.2

P 1.1-3.1  
M 1.1-2.1  
K 1.1-2.2  
N 1.1-1.4  
N 2.1-2.4, 4.2

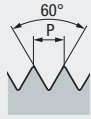
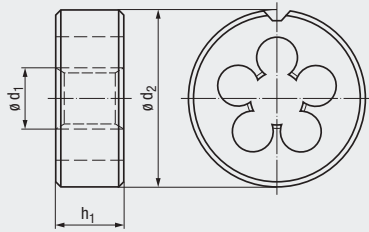
P 1.1-3.1  
K 1.1-2.2

P 1.1-3.1  
K 1.1-2.2

| ø d <sub>1</sub><br>mm | P<br>mm | ø d <sub>2</sub> | x    | h <sub>1</sub> | 4h    | 6g    | 6e | SE-B<br>nor<br>STEEL | SE-B<br>gel<br>STEEL | SE-B<br>nor<br>STEEL | SE-B<br>nor<br>STEEL-LH |
|------------------------|---------|------------------|------|----------------|-------|-------|----|----------------------|----------------------|----------------------|-------------------------|
| <b>M</b> 2,5           | x 0,35  | 16               | x 5  | 2,47           | 2,44  | —     | —  | D0101000.0196        | D0101500.0196        |                      |                         |
| 2,6                    | x 0,35  | 16               | x 5  | 2,57           | 2,54  | —     | —  | D0101000.0199        | D0101500.0199        |                      |                         |
| 3                      | x 0,35  | 20               | x 5  | 2,97           | 2,94  | —     | —  | D0101000.0202        | D0101500.0202        |                      |                         |
| 3,5                    | x 0,35  | 20               | x 5  | 3,47           | 3,44  | —     | —  | D0101000.0205        | D0101500.0205        |                      |                         |
| 4                      | x 0,35  | 20               | x 5  | 3,97           | 3,94  | —     | —  | D0101000.0209        | D0101500.0209        |                      |                         |
| 4                      | x 0,5   | 20               | x 5  | 3,96           | 3,92  | 3,89  |    | D0101000.0210        | D0101500.0210        |                      | D0101050.0210           |
| 5                      | x 0,5   | 20               | x 5  | 4,96           | 4,92  | 4,89  |    | D0101000.0218        | D0101500.0218        |                      | D0101050.0218           |
| 6                      | x 0,5   | 20               | x 5  | 5,96           | 5,92  | 5,89  |    | D0101000.0228        | D0101500.0228        |                      | D0101050.0228           |
| 6                      | x 0,75  | 20               | x 7  | 5,95           | 5,90  | 5,87  |    | D0101000.0229        | D0101500.0229        | D0101030.0229        | D0101050.0229           |
| 7                      | x 0,75  | 25               | x 9  | 6,95           | 6,90  | 6,87  |    | D0101000.0239        | D0101500.0239        |                      |                         |
| 8                      | x 0,5   | 25               | x 9  | 7,96           | 7,92  | 7,89  |    | D0101000.0249        | D0101500.0249        |                      |                         |
| 8                      | x 0,75  | 25               | x 9  | 7,95           | 7,90  | 7,87  |    | D0101000.0250        | D0101500.0250        |                      | D0101050.0250           |
| 8                      | x 1     | 25               | x 9  | 7,94           | 7,88  | 7,85  |    | D0101000.0251        | D0101500.0251        | D0101030.0251        | D0101050.0251           |
| 9                      | x 0,75  | 25               | x 9  | 8,95           | 8,90  | 8,87  |    | D0101000.0262        | D0101500.0262        |                      |                         |
| 9                      | x 1     | 25               | x 9  | 8,94           | 8,88  | 8,85  |    | D0101000.0263        | D0101500.0263        |                      |                         |
| 10                     | x 0,75  | 30               | x 11 | 9,95           | 9,90  | 9,87  |    | D0101000.0275        | D0101500.0275        |                      |                         |
| 10                     | x 1     | 30               | x 11 | 9,94           | 9,88  | 9,85  |    | D0101000.0276        | D0101500.0276        | D0101030.0276        | D0101050.0276           |
| 10                     | x 1,25  | 30               | x 11 | 9,93           | 9,86  | 9,83  |    | D0101000.0277        | D0101500.0277        |                      |                         |
| 11                     | x 1     | 30               | x 11 | 10,94          | 10,88 | 10,85 |    | D0101000.0288        | D0101500.0288        |                      |                         |
| 12                     | x 1     | 38               | x 10 | 11,94          | 11,88 | 11,85 |    | D0101000.0301        | D0101500.0301        | D0101030.0301        | D0101050.0301           |
| 12                     | x 1,25  | 38               | x 10 | 11,93          | 11,86 | 11,83 |    | D0101000.0302        | D0101500.0302        |                      |                         |
| 12                     | x 1,5   | 38               | x 10 | 11,92          | 11,85 | 11,81 |    | D0101000.0303        | D0101500.0303        | D0101030.0303        | D0101050.0303           |
| 13                     | x 1     | 38               | x 10 | 12,94          | 12,88 | 12,85 |    | D0101000.0315        | D0101500.0315        |                      |                         |
| 14                     | x 1     | 38               | x 10 | 13,94          | 13,88 | 13,85 |    | D0101000.0329        | D0101500.0329        |                      | D0101050.0329           |
| 14                     | x 1,25  | 38               | x 10 | 13,93          | 13,86 | 13,83 |    | D0101000.0330        | D0101500.0330        |                      |                         |
| 14                     | x 1,5   | 38               | x 10 | 13,92          | 13,85 | 13,81 |    | D0101000.0331        | D0101500.0331        | D0101030.0331        | D0101050.0331           |
| 15                     | x 1     | 38               | x 10 | 14,94          | 14,88 | 14,85 |    | D0101000.0343        | D0101500.0343        |                      |                         |
| 15                     | x 1,5   | 38               | x 10 | 14,92          | 14,85 | 14,81 |    | D0101000.0345        | D0101500.0345        |                      |                         |
| 16                     | x 1     | 45               | x 14 | 15,94          | 15,88 | 15,85 |    | D0101000.0357        | D0101500.0357        |                      |                         |
| 16                     | x 1,5   | 45               | x 14 | 15,92          | 15,85 | 15,81 |    | D0101000.0359        | D0101500.0359        | D0101030.0359        | D0101050.0359           |
| 18                     | x 1     | 45               | x 14 | 17,94          | 17,88 | 17,85 |    | D0101000.0388        | D0101500.0388        |                      |                         |
| 18                     | x 1,5   | 45               | x 14 | 17,92          | 17,85 | 17,81 |    | D0101000.0390        | D0101500.0390        |                      | D0101050.0390           |
| 18                     | x 2     | 45               | x 14 | 17,91          | 17,82 | 17,78 |    | D0101000.0391        | D0101500.0391        |                      |                         |
| 20                     | x 1     | 45               | x 14 | 19,94          | 19,88 | 19,85 |    | D0101000.0420        | D0101500.0420        |                      |                         |
| 20                     | x 1,5   | 45               | x 14 | 19,92          | 19,85 | 19,81 |    | D0101000.0422        | D0101500.0422        |                      | D0101050.0422           |
| 20                     | x 2     | 45               | x 14 | 19,91          | 19,82 | 19,78 |    | D0101000.0423        | D0101500.0423        |                      |                         |
| 22                     | x 1     | 55               | x 16 | 21,94          | 21,88 | 21,85 |    | D0101000.0436        | D0101500.0436        |                      |                         |
| 22                     | x 1,5   | 55               | x 16 | 21,92          | 21,85 | 21,81 |    | D0101000.0438        | D0101500.0438        |                      | D0101050.0438           |
| 22                     | x 2     | 55               | x 16 | 21,91          | 21,82 | 21,78 |    | D0101000.0439        | D0101500.0439        |                      |                         |
| 24                     | x 1     | 55               | x 16 | 23,94          | 23,88 | 23,85 |    | D0101000.0450        | D0101500.0450        |                      |                         |
| 24                     | x 1,5   | 55               | x 16 | 23,92          | 23,85 | 23,81 |    | D0101000.0452        | D0101500.0452        |                      | D0101050.0452           |
| 24                     | x 2     | 55               | x 16 | 23,91          | 23,82 | 23,78 |    | D0101000.0453        | D0101500.0453        |                      |                         |
| 25                     | x 1     | 55               | x 16 | 24,94          | 24,88 | 24,85 |    | D0101000.0456        | D0101500.0456        |                      |                         |
| 25                     | x 1,5   | 55               | x 16 | 24,92          | 24,85 | 24,81 |    | D0101000.0458        | D0101500.0458        |                      |                         |
| 26                     | x 1,5   | 55               | x 16 | 25,92          | 25,85 | 25,81 |    | D0101000.0464        | D0101500.0464        |                      |                         |
| 27                     | x 1     | 65               | x 18 | 26,94          | 26,88 | 26,85 |    | D0101000.0468        | D0101500.0468        |                      |                         |
| 27                     | x 1,5   | 65               | x 18 | 26,92          | 26,85 | 26,81 |    | D0101000.0470        | D0101500.0470        |                      |                         |
| 27                     | x 2     | 65               | x 18 | 26,91          | 26,82 | 26,78 |    | D0101000.0471        | D0101500.0471        |                      |                         |
| 28                     | x 1     | 65               | x 18 | 27,94          | 27,88 | 27,85 |    | D0101000.0474        | D0101500.0474        |                      |                         |
| 28                     | x 1,5   | 65               | x 18 | 27,92          | 27,85 | 27,81 |    | D0101000.0476        | D0101500.0476        |                      |                         |
| 30                     | x 1     | 65               | x 18 | 29,94          | 29,88 | 29,85 |    | D0101000.0488        | D0101500.0488        |                      |                         |
| 30                     | x 1,5   | 65               | x 18 | 29,92          | 29,85 | 29,81 |    | D0101000.0490        | D0101500.0490        |                      |                         |
| 30                     | x 2     | 65               | x 18 | 29,91          | 29,82 | 29,78 |    | D0101000.0491        | D0101500.0491        |                      |                         |

**MF**

DIN 13

DIN EN  
22568Vorarbeitsdurchmesser  $d \approx$   
Preparatory diameter  $d \approx$ **VA**  
Stainless steel  
materialsnormal  
standard**MS**  
Copper-zinc  
alloysgeläpft  
lappedTechnische Informationen  
Technical informationToleranz · Tolerance  
Schneidstoff · Cutting material

6g

HSSE

2

E / O / P

P 1.1-3.1

M 1.1-2.1

6g

HSS

1

E / O

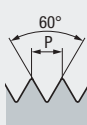
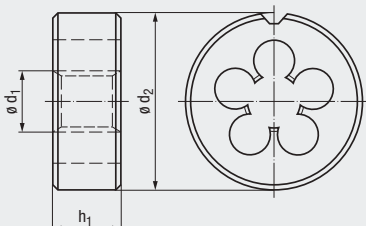
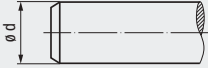
N 2.3, 4.1

Einsatzgebiete – Material  
Applications – material

» 516

|   | $\varnothing d_1$<br>mm |        |                   |   |       | $\varnothing d \approx$ |       |       | SE-B<br>nor<br>VA | SE-B<br>gel<br>MS              |
|---|-------------------------|--------|-------------------|---|-------|-------------------------|-------|-------|-------------------|--------------------------------|
|   | $\varnothing d_1$       | P      | $\varnothing d_2$ | x | $h_1$ | 4h                      | 6g    | 6e    |                   |                                |
| M | 2,5                     | x 0,35 | 16                | x | 5     | 2,47                    | 2,44  | —     |                   |                                |
|   | 2,6                     | x 0,35 | 16                | x | 5     | 2,57                    | 2,54  | —     |                   |                                |
|   | 3                       | x 0,35 | 20                | x | 5     | 2,97                    | 2,94  | —     |                   |                                |
|   | 3,5                     | x 0,35 | 20                | x | 5     | 3,47                    | 3,44  | —     |                   |                                |
|   | 4                       | x 0,35 | 20                | x | 5     | 3,97                    | 3,94  | —     |                   |                                |
|   | 4                       | x 0,5  | 20                | x | 5     | 3,96                    | 3,92  | 3,89  |                   |                                |
|   | 5                       | x 0,5  | 20                | x | 5     | 4,96                    | 4,92  | 4,89  |                   |                                |
|   | 6                       | x 0,5  | 20                | x | 5     | 5,96                    | 5,92  | 5,89  |                   |                                |
|   | 6                       | x 0,75 | 20                | x | 7     | 5,95                    | 5,90  | 5,87  | D0103000.0229     | D0102500.0228<br>D0102500.0229 |
|   | 7                       | x 0,75 | 25                | x | 9     | 6,95                    | 6,90  | 6,87  |                   | D0102500.0239                  |
|   | 8                       | x 0,5  | 25                | x | 9     | 7,96                    | 7,92  | 7,89  |                   | D0102500.0249                  |
|   | 8                       | x 0,75 | 25                | x | 9     | 7,95                    | 7,90  | 7,87  | D0103000.0250     | D0102500.0250                  |
|   | 8                       | x 1    | 25                | x | 9     | 7,94                    | 7,88  | 7,85  | D0103000.0251     | D0102500.0251                  |
|   | 9                       | x 0,75 | 25                | x | 9     | 8,95                    | 8,90  | 8,87  |                   |                                |
|   | 9                       | x 1    | 25                | x | 9     | 8,94                    | 8,88  | 8,85  |                   |                                |
|   | 10                      | x 0,75 | 30                | x | 11    | 9,95                    | 9,90  | 9,87  |                   | D0102500.0275                  |
|   | 10                      | x 1    | 30                | x | 11    | 9,94                    | 9,88  | 9,85  | D0103000.0276     | D0102500.0276                  |
|   | 10                      | x 1,25 | 30                | x | 11    | 9,93                    | 9,86  | 9,83  |                   |                                |
|   | 11                      | x 1    | 30                | x | 11    | 10,94                   | 10,88 | 10,85 |                   |                                |
|   | 12                      | x 1    | 38                | x | 10    | 11,94                   | 11,88 | 11,85 | D0103000.0301     | D0102500.0301                  |
|   | 12                      | x 1,25 | 38                | x | 10    | 11,93                   | 11,86 | 11,83 |                   |                                |
|   | 12                      | x 1,5  | 38                | x | 10    | 11,92                   | 11,85 | 11,81 | D0103000.0303     | D0102500.0303                  |
|   | 13                      | x 1    | 38                | x | 10    | 12,94                   | 12,88 | 12,85 |                   | D0102500.0329                  |
|   | 14                      | x 1    | 38                | x | 10    | 13,94                   | 13,88 | 13,85 |                   |                                |
|   | 14                      | x 1,25 | 38                | x | 10    | 13,93                   | 13,86 | 13,83 |                   |                                |
|   | 14                      | x 1,5  | 38                | x | 10    | 13,92                   | 13,85 | 13,81 | D0103000.0331     | D0102500.0331                  |
|   | 15                      | x 1    | 38                | x | 10    | 14,94                   | 14,88 | 14,85 |                   |                                |
|   | 15                      | x 1,5  | 38                | x | 10    | 14,92                   | 14,85 | 14,81 |                   |                                |
|   | 16                      | x 1    | 45                | x | 14    | 15,94                   | 15,88 | 15,85 |                   | D0102500.0357                  |
|   | 16                      | x 1,5  | 45                | x | 14    | 15,92                   | 15,85 | 15,81 | D0103000.0359     | D0102500.0359                  |
|   | 18                      | x 1    | 45                | x | 14    | 17,94                   | 17,88 | 17,85 |                   |                                |
|   | 18                      | x 1,5  | 45                | x | 14    | 17,92                   | 17,85 | 17,81 | D0103000.0390     | D0102500.0390                  |
|   | 18                      | x 2    | 45                | x | 14    | 17,91                   | 17,82 | 17,78 |                   |                                |
|   | 20                      | x 1    | 45                | x | 14    | 19,94                   | 19,88 | 19,85 |                   | D0102500.0420                  |
|   | 20                      | x 1,5  | 45                | x | 14    | 19,92                   | 19,85 | 19,81 | D0103000.0422     | D0102500.0422                  |
|   | 20                      | x 2    | 45                | x | 14    | 19,91                   | 19,82 | 19,78 |                   |                                |
|   | 22                      | x 1    | 55                | x | 16    | 21,94                   | 21,88 | 21,85 |                   | D0102500.0436                  |
|   | 22                      | x 1,5  | 55                | x | 16    | 21,92                   | 21,85 | 21,81 | D0103000.0438     | D0102500.0438                  |
|   | 22                      | x 2    | 55                | x | 16    | 21,91                   | 21,82 | 21,78 |                   |                                |
|   | 24                      | x 1    | 55                | x | 16    | 23,94                   | 23,88 | 23,85 |                   |                                |
|   | 24                      | x 1,5  | 55                | x | 16    | 23,92                   | 23,85 | 23,81 | D0103000.0452     | D0102500.0452                  |
|   | 24                      | x 2    | 55                | x | 16    | 23,91                   | 23,82 | 23,78 |                   |                                |
|   | 25                      | x 1    | 55                | x | 16    | 24,94                   | 24,88 | 24,85 |                   |                                |
|   | 25                      | x 1,5  | 55                | x | 16    | 24,92                   | 24,85 | 24,81 |                   |                                |
|   | 26                      | x 1,5  | 55                | x | 16    | 25,92                   | 25,85 | 25,81 |                   | D0102500.0464                  |
|   | 27                      | x 1    | 65                | x | 18    | 26,94                   | 26,88 | 26,85 |                   |                                |
|   | 27                      | x 1,5  | 65                | x | 18    | 26,92                   | 26,85 | 26,81 |                   |                                |
|   | 27                      | x 2    | 65                | x | 18    | 26,91                   | 26,82 | 26,78 |                   |                                |
|   | 28                      | x 1    | 65                | x | 18    | 27,94                   | 27,88 | 27,85 |                   |                                |
|   | 28                      | x 1,5  | 65                | x | 18    | 27,92                   | 27,85 | 27,81 |                   |                                |
|   | 30                      | x 1    | 65                | x | 18    | 29,94                   | 29,88 | 29,85 |                   |                                |
|   | 30                      | x 1,5  | 65                | x | 18    | 29,92                   | 29,85 | 29,81 |                   |                                |
|   | 30                      | x 2    | 65                | x | 18    | 29,91                   | 29,82 | 29,78 |                   |                                |

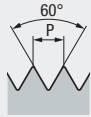
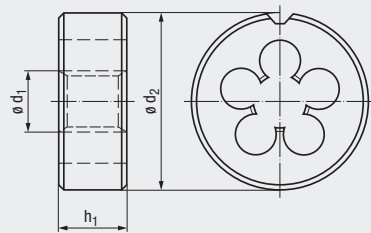


|                                                                                                                                                                                                                                                                                                                                                                |        |                  |                                   |                                                         |       |                                                                                                                |               |                                                                                                                 |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------|-----------------------------------|---------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------|--|
| <div>  <h1>UNC</h1> <p>ASME B1.1</p>  <p>Vorarbeitsdurchmesser d ≈<br/>Preparatory diameter d ≈</p>  </div> |        |                  |                                   | <b>DIN EN 22568</b>                                     |       | <b>STEEL</b><br>Steel materials                                                                                |               |                                                                                                                 |  |
|                                                                                                                                                                                                                                                                                                                                                                |        |                  |                                   |                                                         |       | <br><b>normal</b><br>standard |               | <br><b>geläppt</b><br>lapped |  |
|                                                                                                                                                                                                                                                                                                                                                                |        |                  |                                   |                                                         |       |                               |               |                              |  |
|                                                                                                                                                                                                                                                                                                                                                                |        |                  |                                   | Toleranz · Tolerance<br>Schneidstoff · Cutting material |       | 2A<br>HSS                                                                                                      |               | 2A<br>HSS                                                                                                       |  |
| Technische Informationen<br>Technical information                                                                                                                                                                                                                                                                                                              |        |                  |                                   |                                                         |       | 1,5<br>E / O                                                                                                   |               | 1,5<br>E / O                                                                                                    |  |
| Einsatzgebiete – Material<br>Applications – material                                                                                                                                                                                                                                                                                                           |        |                  |                                   | P 1.1-3.1<br>K 1.1-2.2                                  |       | P 1.1-3.1<br>M 1.1-2.1<br>K 1.1-2.2<br>N 1.1-1.4<br>N 2.1-2.4, 4.2                                             |               |                                                                                                                 |  |
| » 516                                                                                                                                                                                                                                                                                                                                                          |        |                  |                                   |                                                         |       |                                                                                                                |               |                                                                                                                 |  |
|                                                                                                                                                                                                                                                                                                                                                                |        |                  |                                   |                                                         |       | <b>SE-B</b><br>nor<br>STEEL                                                                                    |               | <b>SE-B</b><br>gel<br>STEEL                                                                                     |  |
| ø d <sub>1</sub><br>inch                                                                                                                                                                                                                                                                                                                                       | inch   | P<br>Gg/1" (tpi) | ø d <sub>2</sub> x h <sub>1</sub> | 2A                                                      | 3A    |                                                                                                                |               |                                                                                                                 |  |
| Nr. 1                                                                                                                                                                                                                                                                                                                                                          | 0.0730 | 64               | 16 x 5                            | 1,79                                                    | 1,81  | D0101000.5000                                                                                                  | D0101500.5000 |                                                                                                                 |  |
| Nr. 2                                                                                                                                                                                                                                                                                                                                                          | 0.0860 | 56               | 16 x 5                            | 2,12                                                    | 2,14  | D0101000.5001                                                                                                  | D0101500.5001 |                                                                                                                 |  |
| Nr. 3                                                                                                                                                                                                                                                                                                                                                          | 0.0990 | 48               | 16 x 5                            | 2,44                                                    | 2,46  | D0101000.5002                                                                                                  | D0101500.5002 |                                                                                                                 |  |
| Nr. 4                                                                                                                                                                                                                                                                                                                                                          | 0.1120 | 40               | 16 x 5                            | 2,76                                                    | 2,78  | D0101000.5003                                                                                                  | D0101500.5003 |                                                                                                                 |  |
| Nr. 5                                                                                                                                                                                                                                                                                                                                                          | 0.1250 | 40               | 20 x 5                            | 3,09                                                    | 3,11  | D0101000.5004                                                                                                  | D0101500.5004 |                                                                                                                 |  |
| Nr. 6                                                                                                                                                                                                                                                                                                                                                          | 0.1380 | 32               | 20 x 7                            | 3,41                                                    | 3,43  | D0101000.5005                                                                                                  | D0101500.5005 |                                                                                                                 |  |
| Nr. 8                                                                                                                                                                                                                                                                                                                                                          | 0.1640 | 32               | 20 x 7                            | 4,07                                                    | 4,09  | D0101000.5006                                                                                                  | D0101500.5006 |                                                                                                                 |  |
| Nr. 10                                                                                                                                                                                                                                                                                                                                                         | 0.1900 | 24               | 20 x 7                            | 4,71                                                    | 4,73  | D0101000.5007                                                                                                  | D0101500.5007 |                                                                                                                 |  |
| Nr. 12                                                                                                                                                                                                                                                                                                                                                         | 0.2160 | 24               | 20 x 7                            | 5,37                                                    | 5,39  | D0101000.5008                                                                                                  | D0101500.5008 |                                                                                                                 |  |
| 1/4                                                                                                                                                                                                                                                                                                                                                            | 0.2500 | 20               | 20 x 7                            | 6,22                                                    | 6,25  | D0101000.5009                                                                                                  | D0101500.5009 |                                                                                                                 |  |
| 5/16                                                                                                                                                                                                                                                                                                                                                           | 0.3125 | 18               | 25 x 9                            | 7,80                                                    | 7,83  | D0101000.5010                                                                                                  | D0101500.5010 |                                                                                                                 |  |
| 3/8                                                                                                                                                                                                                                                                                                                                                            | 0.3750 | 16               | 30 x 11                           | 9,37                                                    | 9,41  | D0101000.5011                                                                                                  | D0101500.5011 |                                                                                                                 |  |
| 7/16                                                                                                                                                                                                                                                                                                                                                           | 0.4375 | 14               | 30 x 11                           | 10,95                                                   | 10,98 | D0101000.5012                                                                                                  | D0101500.5012 |                                                                                                                 |  |
| 1/2                                                                                                                                                                                                                                                                                                                                                            | 0.5000 | 13               | 38 x 14                           | 12,52                                                   | 12,56 | D0101000.5013                                                                                                  | D0101500.5013 |                                                                                                                 |  |
| 9/16                                                                                                                                                                                                                                                                                                                                                           | 0.5625 | 12               | 38 x 14                           | 14,10                                                   | 14,14 | D0101000.5014                                                                                                  | D0101500.5014 |                                                                                                                 |  |
| 5/8                                                                                                                                                                                                                                                                                                                                                            | 0.6250 | 11               | 45 x 18                           | 15,68                                                   | 15,72 | D0101000.5015                                                                                                  | D0101500.5015 |                                                                                                                 |  |
| 3/4                                                                                                                                                                                                                                                                                                                                                            | 0.7500 | 10               | 45 x 18                           | 18,84                                                   | 18,89 | D0101000.5016                                                                                                  | D0101500.5016 |                                                                                                                 |  |
| 7/8                                                                                                                                                                                                                                                                                                                                                            | 0.8750 | 9                | 55 x 22                           | 22,00                                                   | 22,05 | D0101000.5017                                                                                                  | D0101500.5017 |                                                                                                                 |  |
| 1"                                                                                                                                                                                                                                                                                                                                                             | 1.0000 | 8                | 55 x 22                           | 25,16                                                   | 25,21 | D0101000.5018                                                                                                  | D0101500.5018 |                                                                                                                 |  |
| 1 1/8                                                                                                                                                                                                                                                                                                                                                          | 1.1250 | 7                | 65 x 25                           | 28,31                                                   | 28,37 | D0101000.5019                                                                                                  | D0101500.5019 |                                                                                                                 |  |
| 1 1/4                                                                                                                                                                                                                                                                                                                                                          | 1.2500 | 7                | 65 x 25                           | 31,49                                                   | 31,54 | D0101000.5020                                                                                                  | D0101500.5020 |                                                                                                                 |  |
| 1 3/8                                                                                                                                                                                                                                                                                                                                                          | 1.3750 | 6                | 65 x 25                           | 34,63                                                   | 34,69 | D0101000.5021                                                                                                  | D0101500.5021 |                                                                                                                 |  |
| 1 1/2                                                                                                                                                                                                                                                                                                                                                          | 1.5000 | 6                | 75 x 30                           | 37,80                                                   | 37,87 | D0101000.5022                                                                                                  | D0101500.5022 |                                                                                                                 |  |
| 1 3/4                                                                                                                                                                                                                                                                                                                                                          | 1.7500 | 5                | 90 x 36                           | 44,12                                                   | 44,19 | D0101000.5023                                                                                                  | D0101500.5023 |                                                                                                                 |  |
| 2"                                                                                                                                                                                                                                                                                                                                                             | 2.0000 | 4 1/2            | 90 x 36                           | 50,45                                                   | 50,52 | D0101000.5024                                                                                                  | D0101500.5024 |                                                                                                                 |  |

Toleranzklasse 3A und 1A auf Anfrage  
Tolerance classes 3A and 1A upon request

**UNF**

ASME B1.1

DIN EN  
22568Vorarbeitsdurchmesser d ≈  
Preparatory diameter d ≈**STEEL**  
Steel  
materialsnormal  
standardgeläpft  
lappedTechnische Informationen  
Technical informationToleranz - Tolerance  
Schneidstoff - Cutting material

2A

HSS

1,5

E / O

2A

HSS

1,5

E / O

Einsatzgebiete - Material  
Applications - material

» 516

P 1.1-3.1

K 1.1-2.2

P 1.1-3.1

M 1.1-2.1

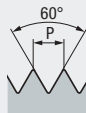
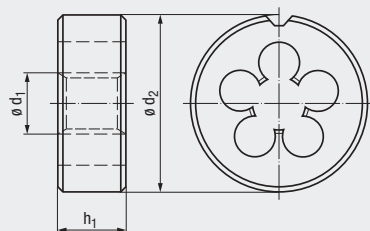
K 1.1-2.2

N 1.1-1.4

N 2.1-2.4, 4.2

| ø d <sub>1</sub><br>inch | inch   | P<br>Gg/1" (tpi) | ø d <sub>2</sub> | x | h <sub>1</sub> | ø d ≈ |       | SE-B<br>nor<br>STEEL | SE-B<br>gel<br>STEEL |  |  |
|--------------------------|--------|------------------|------------------|---|----------------|-------|-------|----------------------|----------------------|--|--|
|                          |        |                  |                  |   |                | 2A    | 3A    |                      |                      |  |  |
| Nr. 0                    | 0.0600 | 80               | 16               | x | 5              | 1,47  | 1,49  | D0101000.5033        | D0101500.5033        |  |  |
| Nr. 1                    | 0.0730 | 72               | 16               | x | 5              | 1,80  | 1,81  | D0101000.5034        | D0101500.5034        |  |  |
| Nr. 2                    | 0.0860 | 64               | 16               | x | 5              | 2,12  | 2,14  | D0101000.5035        | D0101500.5035        |  |  |
| Nr. 3                    | 0.0990 | 56               | 16               | x | 5              | 2,44  | 2,46  | D0101000.5036        | D0101500.5036        |  |  |
| Nr. 4                    | 0.1120 | 48               | 16               | x | 5              | 2,77  | 2,79  | D0101000.5037        | D0101500.5037        |  |  |
| Nr. 5                    | 0.1250 | 44               | 20               | x | 5              | 3,10  | 3,12  | D0101000.5038        | D0101500.5038        |  |  |
| Nr. 6                    | 0.1380 | 40               | 20               | x | 5              | 3,42  | 3,44  | D0101000.5039        | D0101500.5039        |  |  |
| Nr. 8                    | 0.1640 | 36               | 20               | x | 7              | 4,08  | 4,10  | D0101000.5040        | D0101500.5040        |  |  |
| Nr. 10                   | 0.1900 | 32               | 20               | x | 7              | 4,73  | 4,75  | D0101000.5041        | D0101500.5041        |  |  |
| Nr. 12                   | 0.2160 | 28               | 20               | x | 7              | 5,38  | 5,40  | D0101000.5042        | D0101500.5042        |  |  |
| 1/4                      | 0.2500 | 28               | 20               | x | 7              | 6,24  | 6,27  | D0101000.5043        | D0101500.5043        |  |  |
| 5/16                     | 0.3125 | 24               | 25               | x | 9              | 7,82  | 7,85  | D0101000.5044        | D0101500.5044        |  |  |
| 3/8                      | 0.3750 | 24               | 30               | x | 11             | 9,41  | 9,43  | D0101000.5045        | D0101500.5045        |  |  |
| 7/16                     | 0.4375 | 20               | 30               | x | 11             | 10,98 | 11,01 | D0101000.5046        | D0101500.5046        |  |  |
| 1/2                      | 0.5000 | 20               | 38               | x | 10             | 12,56 | 12,60 | D0101000.5047        | D0101500.5047        |  |  |
| 9/16                     | 0.5625 | 18               | 38               | x | 10             | 14,14 | 14,18 | D0101000.5048        | D0101500.5048        |  |  |
| 5/8                      | 0.6250 | 18               | 45               | x | 14             | 15,73 | 15,77 | D0101000.5049        | D0101500.5049        |  |  |
| 3/4                      | 0.7500 | 16               | 45               | x | 14             | 18,89 | 18,93 | D0101000.5050        | D0101500.5050        |  |  |
| 7/8                      | 0.8750 | 14               | 55               | x | 16             | 22,05 | 22,09 | D0101000.5051        | D0101500.5051        |  |  |
| 1"                       | 1.0000 | 12               | 55               | x | 16             | 25,21 | 25,26 | D0101000.5052        | D0101500.5052        |  |  |
| 1 1/8                    | 1.1250 | 12               | 65               | x | 18             | 28,38 | 28,43 | D0101000.5053        | D0101500.5053        |  |  |
| 1 1/4                    | 1.2500 | 12               | 65               | x | 18             | 31,55 | 31,60 | D0101000.5054        | D0101500.5054        |  |  |
| 1 3/8                    | 1.3750 | 12               | 65               | x | 18             | 34,73 | 34,78 | D0101000.5055        | D0101500.5055        |  |  |
| 1 1/2                    | 1.5000 | 12               | 75               | x | 20             | 37,90 | 37,95 | D0101000.5056        | D0101500.5056        |  |  |

Toleranzklasse 3A und 1A auf Anfrage  
Tolerance classes 3A and 1A upon requestSchneideisenhalter für runde  
Schneideisen siehe Seite 540Die stocks for round dies,  
see page 540

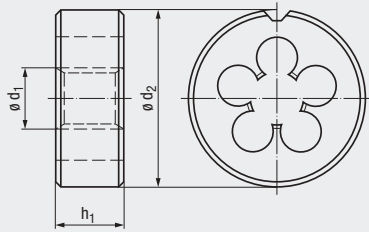
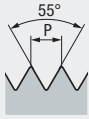
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                               |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--|--|
| <div><div>UNEFA</div><div></div><div>ASME B1.1</div></div> <div></div> <div><div>~ DIN EN 22568</div><div>Vorarbeitsdurchmesser d ≈<br/>Preparatory diameter d ≈</div><div></div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |  |  | <div>STEEL<br/>Steel materials</div> <div><div><br/>normal<br/>standard</div><div><br/>geläppt<br/>lapped</div></div> <div><div></div><div></div></div> |                                                                                                               |  |  |
| <div>Technische Informationen<br/>Technical information</div> <div><div>Toleranz · Tolerance<br/>Schneidstoff · Cutting material</div><div></div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |  |  | <div>2A</div> <div>HSS</div> <div>1,5</div> <div>E / O</div>                                                                                                                                                                                                                                                                                                                                                                                                                                   | <div>2A</div> <div>HSS</div> <div>1,5</div> <div>E / O</div>                                                  |  |  |
| <div>Einsatzgebiete – Material<br/>Applications – material</div> <div>» 516</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |  |  |  | <div>P 1.1-3.1</div> <div>K 1.1-2.2</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <div>P 1.1-3.1</div> <div>M 1.1-2.1</div> <div>K 1.1-2.2</div> <div>N 1.1-1.4</div> <div>N 2.1-2.4, 4.2</div> |  |  |
| <div><div><div><div>ø d<sub>1</sub><br/>inch</div><div>inch</div></div><div><div>P<br/>Gg/1" (tpi)</div><div>ø d<sub>2</sub></div><div>x</div><div>h<sub>1</sub></div></div></div><div><div>ø d ≈</div><div>2A</div><div>3A</div></div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |  |  |  | <div>SE-B<br/>nor<br/>STEEL</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <div>SE-B<br/>gel<br/>STEEL</div>                                                                             |  |  |
| <div><div><div>Nr. 12</div><div>1/4</div><div>5/16</div><div>3/8</div><div>7/16</div><div>1/2</div><div>9/16</div><div>5/8</div><div>3/4</div><div>7/8</div><div>1"</div></div><div><div>0.2160</div><div>0.2500</div><div>0.3125</div><div>0.3750</div><div>0.4375</div><div>0.5000</div><div>0.5625</div><div>0.6250</div><div>0.7500</div><div>0.8750</div><div>1.0000</div></div><div><div>32</div><div>32</div><div>32</div><div>32</div><div>28</div><div>28</div><div>24</div><div>24</div><div>20</div><div>20</div><div>20</div></div><div><div>20</div><div>20</div><div>25</div><div>30</div><div>30</div><div>38</div><div>38</div><div>45</div><div>45</div><div>55</div><div>55</div></div><div><div>x</div><div>x</div><div>x</div><div>x</div><div>x</div><div>x</div><div>x</div><div>x</div><div>x</div><div>x</div><div>x</div></div><div><div>7</div><div>7</div><div>9</div><div>11</div><div>11</div><div>10</div><div>10</div><div>14</div><div>14</div><div>16</div><div>16</div></div></div> <div><div>5,39</div><div>6,25</div><div>7,84</div><div>9,42</div><div>11,00</div><div>12,59</div><div>14,17</div><div>15,75</div><div>18,91</div><div>22,09</div><div>25,26</div></div> <div><div>5,41</div><div>6,27</div><div>7,86</div><div>9,45</div><div>11,03</div><div>12,62</div><div>14,20</div><div>15,78</div><div>18,95</div><div>22,12</div><div>25,30</div></div> <div><div>D0101000.5057</div><div>D0101000.5058</div><div>D0101000.5059</div><div>D0101000.5060</div><div>D0101000.5061</div><div>D0101000.5062</div><div>D0101000.5063</div><div>D0101000.5064</div><div>D0101000.5066</div><div>D0101000.5068</div><div>D0101000.5070</div></div> <div><div>D0101500.5057</div><div>D0101500.5058</div><div>D0101500.5059</div><div>D0101500.5060</div><div>D0101500.5061</div><div>D0101500.5062</div><div>D0101500.5063</div><div>D0101500.5064</div><div>D0101500.5066</div><div>D0101500.5068</div><div>D0101500.5070</div></div> |  |  |  |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                               |  |  |

Toleranzklasse 3A und 1A auf Anfrage  
Tolerance classes 3A and 1A upon request

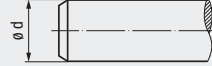


**G (BSP)**

DIN EN ISO 228



Vorarbeitdurchmesser  $d \approx$   
Preparatory diameter  $d \approx$

**STEEL**  
Steel materialsnormal  
standardgeläppt  
lapped**MS**  
Copper-zinc alloysgeläppt  
lapped

Technische Informationen  
Technical information

Toleranz · Tolerance  
Schneidstoff · Cutting material



Einsatzgebiete – Material  
Applications – material

» 516

**P** 1.1-3.1  
**K** 1.1-2.2

**P** 1.1-3.1  
**M** 1.1-2.1  
**K** 1.1-2.2  
**N** 1.1-1.4  
**N** 2.1-2.4, 4.2

**N** 2.3, 4.1

| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | $\varnothing d_1$<br>mm | P<br>Gg/1" (tpi) | $\varnothing d_2$ | x | $h_1$ | $\varnothing d \approx$<br>Class A | SE-B<br>nor<br>STEEL | SE-B<br>gel<br>STEEL | SE-B<br>gel<br>MS 1) |
|---------------------------------------------|-------------------------|------------------|-------------------|---|-------|------------------------------------|----------------------|----------------------|----------------------|
| <b>G</b> 1/16                               | 7,72                    | 28               | 25                | x | 9     | 7,62                               |                      |                      |                      |
| 1/8                                         | 9,73                    | 28               | 30                | x | 11    | 9,62                               | D0101000.4035        | D0101500.4035        | D0102500.4035        |
| 1/4                                         | 13,16                   | 19               | 38                | x | 10    | 13,03                              | D0101000.4036        | D0101500.4036        | D0102500.4036        |
| 3/8                                         | 16,66                   | 19               | 45                | x | 14    | 16,54                              | D0101000.4037        | D0101500.4037        | D0102500.4037        |
| 1/2                                         | 20,96                   | 14               | 45                | x | 14    | 20,81                              | D0101000.4038        | D0101500.4038        | D0102500.4038        |
| 5/8                                         | 22,91                   | 14               | 55                | x | 16    | 22,77                              | D0101000.4039        | D0101500.4039        |                      |
| 3/4                                         | 26,44                   | 14               | 55                | x | 16    | 26,30                              | D0101000.4040        | D0101500.4040        | D0102500.4040        |
| 7/8                                         | 30,20                   | 14               | 65                | x | 18    | 30,06                              | D0101000.4041        | D0101500.4041        |                      |
| 1"                                          | 33,25                   | 11               | 65                | x | 18    | 33,07                              | D0101000.4042        | D0101500.4042        | D0102500.4042        |
| 1 1/8                                       | 37,90                   | 11               | 75                | x | 20    | 37,72                              | D0101000.4043        | D0101500.4043        |                      |
| 1 1/4                                       | 41,91                   | 11               | 75                | x | 20    | 41,73                              | D0101000.4044        | D0101500.4044        | D0102500.4044        |
| 1 3/8                                       | 44,32                   | 11               | 90                | x | 22    | 44,14                              | D0101000.4045        | D0101500.4045        |                      |
| 1 1/2                                       | 47,80                   | 11               | 90                | x | 22    | 47,62                              | D0101000.4046        | D0101500.4046        | D0102500.4046        |
| 1 3/4                                       | 53,75                   | 11               | 90                | x | 22    | 53,57                              | D0101000.4048        | D0101500.4048        |                      |
| 2"                                          | 59,61                   | 11               | 105               | x | 22    | 59,43                              | D0101000.4050        | D0101500.4050        |                      |

1) Bei Bearbeitung von dünnwandigen Messingrohren bitten wir um nähere Angaben (Werkstückskizze)  
If thin-walled brass tubes are to be cut we need more technical details or a sketch of the workpiece

Product  
FinderV<sub>c</sub>

M

MF

UNC

UNE  
UNEF**G**NPT, NPTF  
R

BSW, BSF

Tr, Tr-F

Zubehör  
Accessories

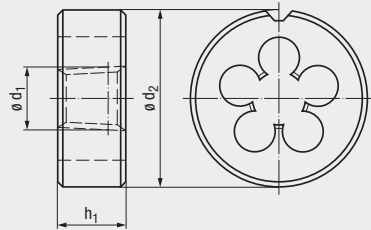
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC                    |
| UNF<br>UNEF            |
| <b>G</b>               |
| NPT, NPTF<br>R         |
| BSW, BSF               |
| Tr, Tr-F               |
| Zubehör<br>Accessories |

| <div> <p><b>G (BSP)</b><br/>DIN EN ISO 228</p> <p>Vorarbeitsdurchmesser d ≈<br/>Preparatory diameter d ≈</p> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                        |                  |                  | <b>MS</b><br>Copper-zinc alloys<br><br><b>geläppt</b><br>lapped<br>                     |                        |                  |                       |   |                |                  |                       |              |      |    |    |   |    |      |  |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |    |       |    |    |   |    |       |                      |  |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------|------------------|-----------------------------------------------------------------------------------------|------------------------|------------------|-----------------------|---|----------------|------------------|-----------------------|--------------|------|----|----|---|----|------|--|-----|-------|----|----|---|----|-------|----------------------|-----|-------|----|----|---|----|-------|----------------------|-----|-------|----|----|---|----|-------|----------------------|-----|-------|----|----|---|----|-------|----------------------|----|-------|----|----|---|----|-------|----------------------|--|--|--|--|
| <b>Technische Informationen</b><br>Technical information<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                        |                  |                  | Toleranz · Tolerance<br>Schneidstoff · Cutting material<br>Class A<br>HSS<br>1<br>E / O |                        |                  |                       |   |                |                  |                       |              |      |    |    |   |    |      |  |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |    |       |    |    |   |    |       |                      |  |  |  |  |
| <b>Einsatzgebiete – Material</b><br>Applications – material<br>» 516                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                        |                  |                  | <b>N 2.3, 4.1</b>                                                                       |                        |                  |                       |   |                |                  |                       |              |      |    |    |   |    |      |  |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |    |       |    |    |   |    |       |                      |  |  |  |  |
| <table border="1"> <thead> <tr> <th>Nenngröße<br/>Nom. size</th> <th>Ø d<sub>1</sub><br/>mm</th> <th>P<br/>Gg/1" (tpi)</th> <th>Ø d<sub>2</sub></th> <th>x</th> <th>h<sub>1</sub></th> <th>Ø d ≈<br/>Class A</th> <th>SE-GLOCK<br/>gel<br/>MS</th> </tr> </thead> <tbody> <tr> <td><b>G</b> 1/8</td> <td>9,73</td> <td>28</td> <td>25</td> <td>x</td> <td>14</td> <td>9,62</td> <td></td> </tr> <tr> <td>1/4</td> <td>13,16</td> <td>19</td> <td>30</td> <td>x</td> <td>18</td> <td>13,03</td> <td><b>D0302500.4036</b></td> </tr> <tr> <td>3/8</td> <td>16,66</td> <td>19</td> <td>38</td> <td>x</td> <td>20</td> <td>16,54</td> <td><b>D0302500.4037</b></td> </tr> <tr> <td>1/2</td> <td>20,96</td> <td>14</td> <td>45</td> <td>x</td> <td>24</td> <td>20,81</td> <td><b>D0302500.4038</b></td> </tr> <tr> <td>3/4</td> <td>26,44</td> <td>14</td> <td>55</td> <td>x</td> <td>28</td> <td>26,30</td> <td><b>D0302500.4040</b></td> </tr> <tr> <td>1"</td> <td>33,25</td> <td>11</td> <td>65</td> <td>x</td> <td>30</td> <td>33,07</td> <td><b>D0302500.4042</b></td> </tr> </tbody> </table> |                        |                  |                  | Nenngröße<br>Nom. size                                                                  | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | Ø d <sub>2</sub>      | x | h <sub>1</sub> | Ø d ≈<br>Class A | SE-GLOCK<br>gel<br>MS | <b>G</b> 1/8 | 9,73 | 28 | 25 | x | 14 | 9,62 |  | 1/4 | 13,16 | 19 | 30 | x | 18 | 13,03 | <b>D0302500.4036</b> | 3/8 | 16,66 | 19 | 38 | x | 20 | 16,54 | <b>D0302500.4037</b> | 1/2 | 20,96 | 14 | 45 | x | 24 | 20,81 | <b>D0302500.4038</b> | 3/4 | 26,44 | 14 | 55 | x | 28 | 26,30 | <b>D0302500.4040</b> | 1" | 33,25 | 11 | 65 | x | 30 | 33,07 | <b>D0302500.4042</b> |  |  |  |  |
| Nenngröße<br>Nom. size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | Ø d <sub>2</sub> | x                                                                                       | h <sub>1</sub>         | Ø d ≈<br>Class A | SE-GLOCK<br>gel<br>MS |   |                |                  |                       |              |      |    |    |   |    |      |  |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |    |       |    |    |   |    |       |                      |  |  |  |  |
| <b>G</b> 1/8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 9,73                   | 28               | 25               | x                                                                                       | 14                     | 9,62             |                       |   |                |                  |                       |              |      |    |    |   |    |      |  |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |    |       |    |    |   |    |       |                      |  |  |  |  |
| 1/4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 13,16                  | 19               | 30               | x                                                                                       | 18                     | 13,03            | <b>D0302500.4036</b>  |   |                |                  |                       |              |      |    |    |   |    |      |  |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |    |       |    |    |   |    |       |                      |  |  |  |  |
| 3/8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 16,66                  | 19               | 38               | x                                                                                       | 20                     | 16,54            | <b>D0302500.4037</b>  |   |                |                  |                       |              |      |    |    |   |    |      |  |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |    |       |    |    |   |    |       |                      |  |  |  |  |
| 1/2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20,96                  | 14               | 45               | x                                                                                       | 24                     | 20,81            | <b>D0302500.4038</b>  |   |                |                  |                       |              |      |    |    |   |    |      |  |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |    |       |    |    |   |    |       |                      |  |  |  |  |
| 3/4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 26,44                  | 14               | 55               | x                                                                                       | 28                     | 26,30            | <b>D0302500.4040</b>  |   |                |                  |                       |              |      |    |    |   |    |      |  |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |    |       |    |    |   |    |       |                      |  |  |  |  |
| 1"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 33,25                  | 11               | 65               | x                                                                                       | 30                     | 33,07            | <b>D0302500.4042</b>  |   |                |                  |                       |              |      |    |    |   |    |      |  |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |     |       |    |    |   |    |       |                      |    |       |    |    |   |    |       |                      |  |  |  |  |

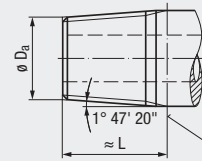


**NPT**

ANSI/ASME B1.20.1



Bolzen-Vorarbeitsmaße im Kegel 1:16  
Preparatory bolt dimensions on taper 1:16



Endlage Schneideisen  
Final position of die

**STEEL**  
Steel  
materials



normal  
standard



Technische Informationen  
Technical information

Toleranz · Tolerance  
Schneidstoff · Cutting material



Einsatzgebiete – Material  
Applications – material

» 516

**P** 1.1-3.1  
**K** 1.1-2.2  
**N** 2.3, 4.1

| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing d_2$ | x | $h_1$ | $\varnothing D_a$<br>min. | $\varnothing D_a$<br>max. | $\approx L$ | SE-KEG<br>nor<br>STEEL |
|---------------------------------------------|------------------|-------------------|---|-------|---------------------------|---------------------------|-------------|------------------------|
| 1/16                                        | 27               | 25                | x | 9     | 7,52                      | 7,64                      | 8,3         | D0191000.5763          |
| 1/8                                         | 27               | 30                | x | 11    | 9,87                      | 9,99                      | 8,4         | D0191000.5764          |
| 1/4                                         | 18               | 38                | x | 14    | 13,10                     | 13,26                     | 12,7        | D0191000.5765          |
| 3/8                                         | 18               | 45                | x | 14    | 16,52                     | 16,67                     | 12,9        | D0191000.5766          |
| 1/2                                         | 14               | 45                | x | 18    | 20,55                     | 20,71                     | 16,8        | D0191000.5767          |
| 3/4                                         | 14               | 55                | x | 22    | 25,87                     | 26,03                     | 17,0        | D0191000.5768          |
| 1"                                          | 11 1/2           | 65                | x | 25    | 32,42                     | 32,59                     | 21,2        | D0191000.5769          |
| 1 1/4                                       | 11 1/2           | 75                | x | 26    | 41,14                     | 41,32                     | 21,9        | D0191000.5770          |
| 1 1/2                                       | 11 1/2           | 90                | x | 27    | 47,21                     | 47,39                     | 22,3        | D0191000.5771          |
| 2"                                          | 11 1/2           | 105               | x | 28    | 59,25                     | 59,42                     | 23,1        | D0191000.5772          |

Product

Finder

V<sub>c</sub>

M

MF

UNC

UNF

G

NPT NPTF  
R

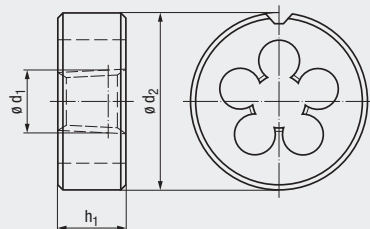
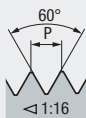
BSW, BSF

Tr, Tr-F

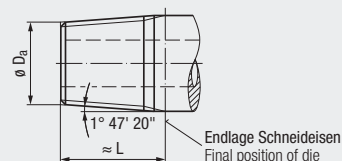
Zubehör  
Accessories

# NPTF

ANSI B1.20.3



Bolzen-Vorarbeitsmaße im Kegel 1:16  
Preparatory bolt dimensions on taper 1:16



**STEEL**  
Steel  
materials



**normal**  
standard



Toleranz · Tolerance  
Schneidstoff · Cutting material



HSS

1,5

O / P

Einsatzgebiete – Material  
Applications – material

» 516

**P** 1.1-3.1

**K** 1.1-2.2

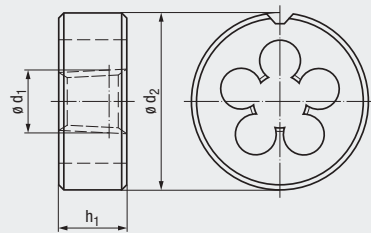
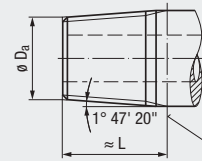
**N** 2.3, 4.1

| Nenngröße<br>Nom. size | P           |                  |   |                |                          |                          |      | SE-KEG<br>nor<br>STEEL |
|------------------------|-------------|------------------|---|----------------|--------------------------|--------------------------|------|------------------------|
| Ø d <sub>1</sub>       | Gg/1" (tpi) | Ø d <sub>2</sub> | x | h <sub>1</sub> | Ø D <sub>a</sub><br>min. | Ø D <sub>a</sub><br>max. | ≈ L  |                        |
| 1/16                   | 27          | 25               | x | 9              | 7,52                     | 7,62                     | 9,2  | D0191000.5782          |
| 1/8                    | 27          | 30               | x | 11             | 9,87                     | 9,96                     | 9,3  | D0191000.5783          |
| 1/4                    | 18          | 38               | x | 14             | 13,13                    | 13,21                    | 14,1 | D0191000.5784          |
| 3/8                    | 18          | 45               | x | 14             | 16,55                    | 16,63                    | 14,3 | D0191000.5785          |
| 1/2                    | 14          | 45               | x | 18             | 20,62                    | 20,70                    | 18,6 | D0191000.5786          |
| 3/4                    | 14          | 55               | x | 22             | 25,93                    | 26,02                    | 18,9 | D0191000.5787          |
| 1"                     | 11 1/2      | 65               | x | 25             | 32,47                    | 32,56                    | 23,5 | D0191000.5788          |
| 1 1/4                  | 11 1/2      | 75               | x | 26             | 41,20                    | 41,29                    | 24,1 |                        |
| 1 1/2                  | 11 1/2      | 90               | x | 27             | 47,27                    | 47,36                    | 24,5 |                        |
| 2"                     | 11 1/2      | 105              | x | 28             | 59,28                    | 59,37                    | 25,3 |                        |





DIN EN 10226-1, ISO 7-1

≈ DIN EN  
24230STEEL  
Steel  
materialsnormal  
standardBolzen-Vorarbeitsmaße im Kegel 1:16  
Preparatory bolt dimensions on taper 1:16Endlage Schneideisen  
Final position of dieTechnische Informationen  
Technical informationToleranz · Tolerance  
Schneidstoff · Cutting materialEinsatzgebiete – Material  
Applications – material

» 516

HSS

1,5

0 / P

P 1.1-3.1

K 1.1-2.2

N 2.3, 4.1

| Nenngröße<br>Nom. size<br>$\varnothing d_1$ | P<br>Gg/1" (tpi) | $\varnothing d_2$ | x | $h_1$ | $\varnothing D_a$ | Tol.   | $\approx L$ | SE-KEG<br>nor<br>STEEL |  |  |
|---------------------------------------------|------------------|-------------------|---|-------|-------------------|--------|-------------|------------------------|--|--|
| R 1/8                                       | 28               | 30                | x | 11    | 9,48              | ± 0,05 | 8,1         | D0191000.4069          |  |  |
| 1/4                                         | 19               | 38                | x | 14    | 12,78             | ± 0,08 | 12,0        | D0191000.4070          |  |  |
| 3/8                                         | 19               | 45                | x | 14    | 16,26             | ± 0,08 | 12,4        | D0191000.4071          |  |  |
| 1/2                                         | 14               | 45                | x | 18    | 20,44             | ± 0,11 | 16,4        | D0191000.4072          |  |  |
| 3/4                                         | 14               | 55                | x | 22    | 25,85             | ± 0,11 | 17,7        | D0191000.4073          |  |  |
| 1"                                          | 11               | 65                | x | 25    | 32,60             | ± 0,14 | 20,8        | D0191000.4074          |  |  |

Zugehöriges Innengewinde ist zylindrisch, siehe Gewindebohrer Seite 243 - 245  
The appropriate internal thread is cylindrical, see taps, page 243 - 245Product  
FinderV<sub>c</sub>

M

MF

UNC

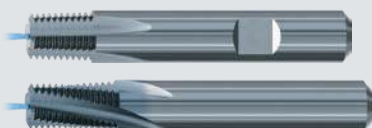
UNF  
UNEF

G

NPT, NPTF  
R

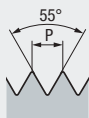
BSW, BSF

Tr, Tr-F

Zubehör  
AccessoriesGewindefräser für kegelige Gewinde  
Typ GF-KEG siehe Seite 449 - 462Thread milling cutters for tapered threads  
type GF-KEG, see page 449 - 462

# BSW

BS 84

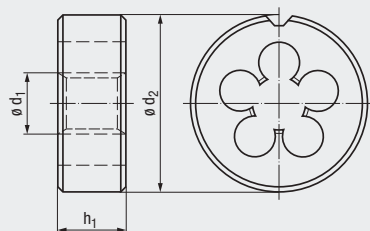


DIN EN  
22568

STEEL  
Steel  
materials



normal  
standard



Vorarbeitsdurchmesser d ≈  
Preparatory diameter d ≈



Toleranz · Tolerance  
Schneidstoff · Cutting material



Technische Informationen  
Technical information

Einsatzgebiete – Material  
Applications – material

» 516

medium class

HSS

1,5

E / O

P 1.1-3.1

K 1.1-2.2

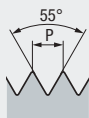
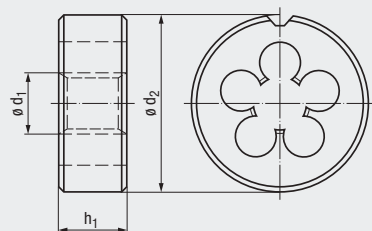
SE-B  
nor  
STEEL

|            | Ø d <sub>1</sub><br>inch | inch  | P<br>Gg/1" (tpi) | Ø d <sub>2</sub> | x | h <sub>1</sub> | Ø d ≈<br>medium class |               |  |  |
|------------|--------------------------|-------|------------------|------------------|---|----------------|-----------------------|---------------|--|--|
| <b>BSW</b> | 1/16                     | 1,59  | 60               | 16               | x | 5              | 1,51                  | D0101000.3044 |  |  |
|            | 3/32                     | 2,38  | 48               | 16               | x | 5              | 2,30                  | D0101000.3045 |  |  |
|            | 1/8                      | 3,18  | 40               | 20               | x | 5              | 3,09                  | D0101000.3046 |  |  |
|            | 5/32                     | 3,97  | 32               | 20               | x | 7              | 3,88                  | D0101000.3047 |  |  |
|            | 3/16                     | 4,76  | 24               | 20               | x | 7              | 4,66                  | D0101000.3048 |  |  |
|            | 7/32                     | 5,56  | 24               | 20               | x | 7              | 5,46                  | D0101000.3049 |  |  |
|            | 1/4                      | 6,35  | 20               | 20               | x | 7              | 6,24                  | D0101000.3050 |  |  |
|            | 5/16                     | 7,94  | 18               | 25               | x | 9              | 7,82                  | D0101000.3051 |  |  |
|            | 3/8                      | 9,53  | 16               | 30               | x | 11             | 9,40                  | D0101000.3052 |  |  |
|            | 7/16                     | 11,11 | 14               | 30               | x | 11             | 10,98                 | D0101000.3053 |  |  |
|            | 1/2                      | 12,70 | 12               | 38               | x | 14             | 12,56                 | D0101000.3054 |  |  |
|            | 9/16                     | 14,29 | 12               | 38               | x | 14             | 14,14                 | D0101000.3055 |  |  |
|            | 5/8                      | 15,88 | 11               | 45               | x | 18             | 15,72                 | D0101000.3056 |  |  |
|            | 3/4                      | 19,05 | 10               | 45               | x | 18             | 18,89                 | D0101000.3058 |  |  |
|            | 7/8                      | 22,23 | 9                | 55               | x | 22             | 22,10                 | D0101000.3060 |  |  |
|            | 1"                       | 25,40 | 8                | 55               | x | 22             | 25,27                 | D0101000.3062 |  |  |
|            | 1 1/8                    | 28,58 | 7                | 65               | x | 25             | 28,44                 | D0101000.3063 |  |  |
|            | 1 1/4                    | 31,75 | 7                | 65               | x | 25             | 31,61                 | D0101000.3064 |  |  |
|            | 1 3/8                    | 34,93 | 6                | 65               | x | 25             | 34,77                 | D0101000.3065 |  |  |
|            | 1 1/2                    | 38,10 | 6                | 75               | x | 30             | 37,95                 | D0101000.3066 |  |  |
|            | 1 5/8                    | 41,28 | 5                | 75               | x | 30             | 41,11                 | D0101000.3067 |  |  |
|            | 1 3/4                    | 44,45 | 5                | 90               | x | 36             | 44,28                 | D0101000.3068 |  |  |
|            | 2"                       | 50,80 | 4 1/2            | 90               | x | 36             | 50,62                 | D0101000.3070 |  |  |



**BSF**

BS 84

DIN EN  
22568STEEL  
Steel  
materialsnormal  
standardVorarbeitdurchmesser  $d \approx$   
Preparatory diameter  $d \approx$ Technische Informationen  
Technical informationToleranz · Tolerance  
Schneidstoff · Cutting materialEinsatzgebiete – Material  
Applications – material

» 516

medium class

HSS

1,5

E / O

P 1.1-3.1

K 1.1-2.2

SE-B  
nor  
STEEL

|            | $\varnothing d_1$<br>inch | inch  | P<br>Gg/1" (tpi) | $\varnothing d_2$ | x | $h_1$ | $\varnothing d \approx$<br>medium class |               |  |  |
|------------|---------------------------|-------|------------------|-------------------|---|-------|-----------------------------------------|---------------|--|--|
| <b>BSF</b> | 3/16                      | 4,76  | 32               | 20                | x | 7     | 4,67                                    | D0101000.3088 |  |  |
|            | 1/4                       | 6,35  | 26               | 20                | x | 7     | 6,25                                    | D0101000.3090 |  |  |
|            | 5/16                      | 7,94  | 22               | 25                | x | 9     | 7,83                                    | D0101000.3092 |  |  |
|            | 3/8                       | 9,53  | 20               | 30                | x | 11    | 9,41                                    | D0101000.3093 |  |  |
|            | 7/16                      | 11,11 | 18               | 30                | x | 11    | 10,99                                   | D0101000.3094 |  |  |
|            | 1/2                       | 12,70 | 16               | 38                | x | 10    | 12,57                                   | D0101000.3095 |  |  |
|            | 5/8                       | 15,88 | 14               | 45                | x | 14    | 15,73                                   | D0101000.3097 |  |  |
|            | 3/4                       | 19,05 | 12               | 45                | x | 14    | 18,89                                   | D0101000.3099 |  |  |
|            | 7/8                       | 22,23 | 11               | 55                | x | 16    | 22,11                                   | D0101000.3101 |  |  |
|            | 1"                        | 25,40 | 10               | 55                | x | 16    | 25,28                                   | D0101000.3102 |  |  |

Product  
FinderV<sub>c</sub>

M

MF

UNC

UNF  
UNEF

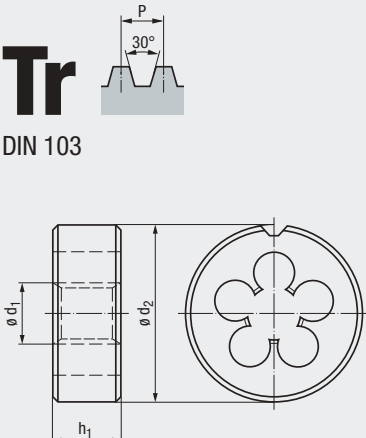
G

NPT, NPTF  
R

BSW, BSF

Tr, Tr-F

Zubehör  
Accessories

|                                                                                                                                                                                                             |         |                  |                  |                                                                                                                                                                                                                                                   |               |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--|--|
|  <p><b>Tr</b><br/>DIN 103</p> <p>Vorarbeitsdurchmesser d ≈<br/>Preparatory diameter d ≈</p>                                |         |                  |                  | <p><b>STEEL</b><br/>Steel<br/>materials</p>  <p><b>normal</b><br/>standard</p>  |               |  |  |
| <p>Toleranz · Tolerance<br/>Schneidstoff · Cutting material</p> <p>Technische Informationen<br/>Technical information</p>  |         |                  |                  | 7e                                                                                                                                                                                                                                                |               |  |  |
|                                                                                                                                                                                                             |         |                  |                  | HSS                                                                                                                                                                                                                                               |               |  |  |
|                                                                                                                                                                                                             |         |                  |                  | 1,5-2                                                                                                                                                                                                                                             |               |  |  |
|                                                                                                                                                                                                             |         |                  |                  | O / P                                                                                                                                                                                                                                             |               |  |  |
| <p>Einsatzgebiete – Material<br/>Applications – material</p> <p>» 516</p>                                                                                                                                   |         |                  |                  | P 1.1 <sup>1)</sup>                                                                                                                                                                                                                               |               |  |  |
|                                                                                                                                                                                                             |         |                  |                  | N 2.3 <sup>1)</sup>                                                                                                                                                                                                                               |               |  |  |
|                                                                                                                                                                                                             |         |                  |                  | TRAPEZ-SE-B<br>nor<br>STEEL                                                                                                                                                                                                                       |               |  |  |
| ø d <sub>1</sub><br>mm                                                                                                                                                                                      | P<br>mm | ø d <sub>2</sub> | x h <sub>1</sub> | ø d ≈<br>7e                                                                                                                                                                                                                                       |               |  |  |
| <b>Tr</b> 8                                                                                                                                                                                                 | x 1,5   | 25               | x 9              | 7,93                                                                                                                                                                                                                                              |               |  |  |
| 10                                                                                                                                                                                                          | x 2     | 38               | x 14             | 9,91                                                                                                                                                                                                                                              | D0101000.7043 |  |  |
| 10                                                                                                                                                                                                          | x 3     | 38               | x 14             | 9,88                                                                                                                                                                                                                                              | D0101000.7044 |  |  |
| 11                                                                                                                                                                                                          | x 3     | 38               | x 14             | 10,88                                                                                                                                                                                                                                             |               |  |  |
| 12                                                                                                                                                                                                          | x 3     | 38               | x 14             | 11,88                                                                                                                                                                                                                                             | D0101000.7046 |  |  |
| 14                                                                                                                                                                                                          | x 3     | 45               | x 18             | 13,88                                                                                                                                                                                                                                             | D0101000.7047 |  |  |
| 14                                                                                                                                                                                                          | x 4     | 45               | x 18             | 13,85                                                                                                                                                                                                                                             | D0101000.7048 |  |  |
| 16                                                                                                                                                                                                          | x 4     | 45               | x 18             | 15,85                                                                                                                                                                                                                                             | D0101000.7051 |  |  |
| 18                                                                                                                                                                                                          | x 4     | 45               | x 18             | 17,85                                                                                                                                                                                                                                             | D0101000.7052 |  |  |
| 20                                                                                                                                                                                                          | x 4     | 55               | x 22             | 19,85                                                                                                                                                                                                                                             | D0101000.7053 |  |  |
| 22                                                                                                                                                                                                          | x 5     | 55               | x 22             | 21,83                                                                                                                                                                                                                                             | D0101000.7054 |  |  |
| 24                                                                                                                                                                                                          | x 5     | 65               | x 25             | 23,83                                                                                                                                                                                                                                             | D0101000.7055 |  |  |
| 26                                                                                                                                                                                                          | x 5     | 65               | x 25             | 25,83                                                                                                                                                                                                                                             | D0101000.7057 |  |  |
| 28                                                                                                                                                                                                          | x 5     | 65               | x 25             | 27,83                                                                                                                                                                                                                                             | D0101000.7058 |  |  |
| 30                                                                                                                                                                                                          | x 6     | 65               | x 25             | 29,81                                                                                                                                                                                                                                             | D0101000.7059 |  |  |
| 32                                                                                                                                                                                                          | x 6     | 65               | x 25             | 31,81                                                                                                                                                                                                                                             | D0101000.7060 |  |  |

<sup>1)</sup> Nur zum Nachschneiden geeignet  
Suitable only for reconditioning

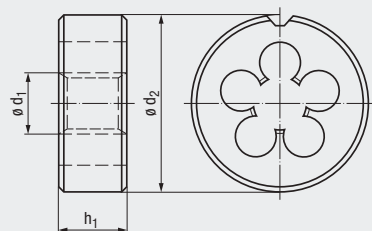
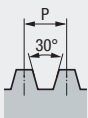


Gewindebohrer für Trapez-Gewinde  
siehe Seite 294 - 298

Taps for trapezoidal threads,  
see page 294 - 298

**Tr-F**

DIN 103



Vorarbeitsdurchmesser  $d \approx$   
Preparatory diameter  $d \approx$



**STEEL**  
Steel  
materials



normal  
standard



Technische Informationen  
Technical information

Toleranz · Tolerance  
Schneidstoff · Cutting material



7e

HSS

1,5-2

O / P

Einsatzgebiete – Material  
Applications – material

» 516

**P** 1.1 <sup>1)</sup>

**N** 2.3 <sup>1)</sup>

**TRAPEZ-SE-B**  
nor  
STEEL

| $\emptyset d_1$<br>mm | P<br>mm | $\emptyset d_2$ | x  | $h_1$ | $\emptyset d \approx$<br>7e |       |                      |  |
|-----------------------|---------|-----------------|----|-------|-----------------------------|-------|----------------------|--|
| <b>Tr</b> 12          | x       | 2               | 38 | x     | 14                          | 11,91 | <b>D0101000.7129</b> |  |
| 14                    | x       | 2               | 38 | x     | 14                          | 13,91 | <b>D0101000.7130</b> |  |
| 16                    | x       | 2               | 45 | x     | 18                          | 15,91 | <b>D0101000.7132</b> |  |
| 18                    | x       | 2               | 45 | x     | 18                          | 17,91 | <b>D0101000.7133</b> |  |
| 20                    | x       | 2               | 45 | x     | 18                          | 19,91 | <b>D0101000.7134</b> |  |
| 22                    | x       | 3               | 55 | x     | 22                          | 21,88 |                      |  |
| 24                    | x       | 3               | 55 | x     | 22                          | 23,88 |                      |  |
| 26                    | x       | 3               | 55 | x     | 22                          | 25,88 |                      |  |
| 28                    | x       | 3               | 65 | x     | 25                          | 27,88 |                      |  |
| 30                    | x       | 3               | 65 | x     | 25                          | 29,88 |                      |  |

<sup>1)</sup> Nur zum Nachschneiden geeignet  
Suitable only for reconditioning

Product

Finder

V<sub>c</sub>

M

MF

UNC

UNF

UNEF

G

NPT, NPTF  
R

BSW, BSF

Tr, Tr-F

Zubehör  
Accessories

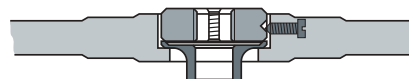
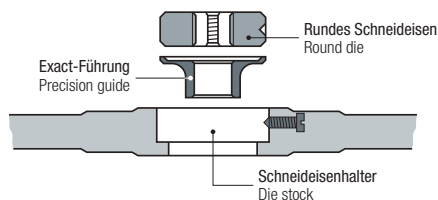
|                        |
|------------------------|
| Product Finder         |
| V <sub>c</sub>         |
| M                      |
| MF                     |
| UNC                    |
| UNF<br>UNEF            |
| G                      |
| NPT, NPTF<br>R         |
| BSW, BSF               |
| Tr, Tr-F               |
| Zubehör<br>Accessories |

DIN EN  
22568



| Schneideisenhalter Nr.<br>Die stock no. | Schneideisen-Aufnahme<br>Die adaptation |   |                |             |
|-----------------------------------------|-----------------------------------------|---|----------------|-------------|
|                                         | Ø d <sub>2</sub>                        | x | h <sub>1</sub> |             |
| 1                                       | 16                                      | x | 5              | FZ201000.01 |
| 2                                       | 20                                      | x | 5              | FZ201000.02 |
| 3                                       | 20                                      | x | 7              | FZ201000.03 |
| 4                                       | 25                                      | x | 9              | FZ201000.04 |
| 5                                       | 30                                      | x | 11             | FZ201000.05 |
| 6                                       | 38                                      | x | 10             | FZ201000.06 |
| 7                                       | 38                                      | x | 14             | FZ201000.07 |
| 8                                       | 45                                      | x | 14             | FZ201000.08 |
| 9                                       | 45                                      | x | 18             | FZ201000.09 |
| 10                                      | 55                                      | x | 16             | FZ201000.10 |
| 11                                      | 55                                      | x | 22             | FZ201000.11 |
| 12                                      | 65                                      | x | 18             | FZ201000.12 |
| 13                                      | 65                                      | x | 25             | FZ201000.13 |
| 14                                      | 75                                      | x | 20             | FZ201000.14 |
| 15                                      | 75                                      | x | 30             | FZ201000.15 |
| 16                                      | 90                                      | x | 22             | FZ201000.16 |
| 17                                      | 90                                      | x | 36             | FZ201000.17 |
| 18                                      | 105                                     | x | 22             | FZ201000.18 |
| 19                                      | 105                                     | x | 36             | FZ201000.19 |

### Exact-Führungen Precision guides



Exact-Führungen zum leichteren Anschneiden von Hand auf Anfrage  
Precision guides for better performance when cutting by hand upon request





| Product Finder             |
|----------------------------|
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |



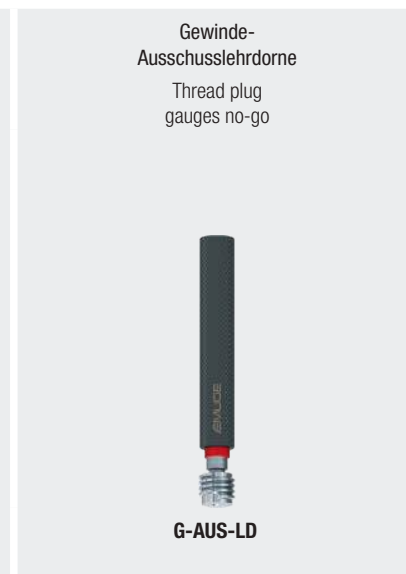
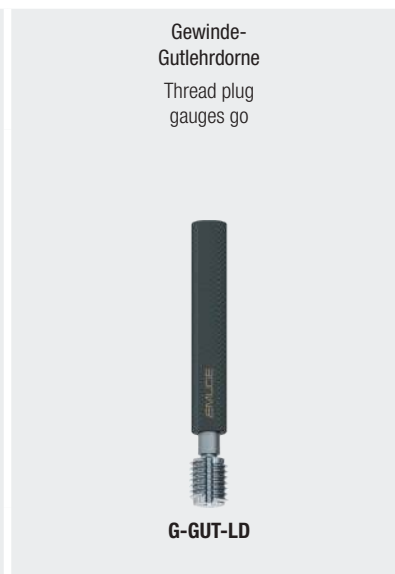
Gewindelehren  
Thread Gauges

Seite · Page

|               |               |           |
|---------------|---------------|-----------|
| Übersichten   | Contents      | 542 - 545 |
| Produktseiten | Product pages | 546 - 610 |



| Product Finder             |
|----------------------------|
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |



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|                   |           |           |           |
|-------------------|-----------|-----------|-----------|
| <b>M</b>          | 546 - 547 | 547       | 547       |
| <b>MF</b>         | 550 - 551 | 552 - 559 | 553 - 559 |
| <b>UNC</b>        | 568       | 568       | 568       |
| <b>UNF</b>        | 570       | 570       | 570       |
| <b>G (BSP)</b>    | 572       | 572       | 572       |
| <b>Rp, R, Rc</b>  |           |           |           |
| <b>NPT</b>        |           |           |           |
| <b>NPTF</b>       |           |           |           |
| <b>BSW</b>        | 576       | 576       | 576       |
| <b>Pg</b>         | 577       | 577       | 577       |
| <b>MJ</b>         | 578       |           |           |
| <b>UNJC</b>       | 579       |           |           |
| <b>UNJF</b>       | 579       |           |           |
| <b>EG M (STI)</b> | 580       |           |           |
| <b>LK-M</b>       | 581       |           |           |
| <b>Tr</b>         | 582       | 582       | 582       |
| <b>Tr-F</b>       | 583       | 583       | 583       |
| <b>Rd</b>         | 584       | 584       | 584       |

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|                                                                                                                                      |     |
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| <p>Glatte Grenz-, Gut- und Ausschuss-Lehrdorne<br/>Smooth plug gauges go/no-go, go, and no-go</p>                                    | 585 |
| <p>Glatte Kernloch-Grenzlehrdorne für Metrische Gewinde<br/>Smooth plug gauges go/no-go for thread holes, for Metric threads</p>     | 586 |
| <p>Kegeliger Gewinde-Rundlauf-Prüfdorn für Metrische Gewinde<br/>Tapered check plug gauge for radial run-out, for Metric threads</p> | 587 |

|                                                                                                                                                                                    |                                                                                                                                                                                             |                                                                                                                                                                                                                           |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <div>Gewinde-<br/>Gutlehringe<br/>Thread ring<br/>gauges go</div> <div></div> <div>G-GUT-LR</div> | <div>Gewinde-<br/>Ausschusslehringe<br/>Thread ring<br/>gauges no-go</div> <div></div> <div>G-AUS-LR</div> | <div>Gewindelehren<br/>für kegelige Gewinde<br/>Thread gauges<br/>for tapered threads</div> <div></div> <div>G-GR-LD<br/>G-GR-LR</div> |            |
| Seite · Page                                                                                                                                                                       |                                                                                                                                                                                             |                                                                                                                                                                                                                           |            |
| 548                                                                                                                                                                                | 549                                                                                                                                                                                         |                                                                                                                                                                                                                           | M          |
| 560 - 567                                                                                                                                                                          | 561 - 657                                                                                                                                                                                   |                                                                                                                                                                                                                           | MF         |
| 569                                                                                                                                                                                | 569                                                                                                                                                                                         |                                                                                                                                                                                                                           | UNC        |
| 571                                                                                                                                                                                | 571                                                                                                                                                                                         |                                                                                                                                                                                                                           | UNF        |
| 572                                                                                                                                                                                | 572                                                                                                                                                                                         |                                                                                                                                                                                                                           | G (BSP)    |
|                                                                                                                                                                                    |                                                                                                                                                                                             | 573                                                                                                                                                                                                                       | Rp, R, Rc  |
|                                                                                                                                                                                    |                                                                                                                                                                                             | 574                                                                                                                                                                                                                       | NPT        |
|                                                                                                                                                                                    |                                                                                                                                                                                             | 575                                                                                                                                                                                                                       | NPTF       |
| 576                                                                                                                                                                                | 576                                                                                                                                                                                         |                                                                                                                                                                                                                           | BSW        |
| 577                                                                                                                                                                                | 577                                                                                                                                                                                         |                                                                                                                                                                                                                           | Pg         |
| 578                                                                                                                                                                                | 578                                                                                                                                                                                         |                                                                                                                                                                                                                           | MJ         |
| 579                                                                                                                                                                                | 579                                                                                                                                                                                         |                                                                                                                                                                                                                           | UNJC       |
| 579                                                                                                                                                                                | 579                                                                                                                                                                                         |                                                                                                                                                                                                                           | UNJF       |
|                                                                                                                                                                                    |                                                                                                                                                                                             |                                                                                                                                                                                                                           | EG M (STI) |
|                                                                                                                                                                                    |                                                                                                                                                                                             |                                                                                                                                                                                                                           | LK-M       |
| 582                                                                                                                                                                                | 582                                                                                                                                                                                         |                                                                                                                                                                                                                           | Tr         |
| 583                                                                                                                                                                                | 583                                                                                                                                                                                         |                                                                                                                                                                                                                           | Tr-F       |
| 584                                                                                                                                                                                | 584                                                                                                                                                                                         |                                                                                                                                                                                                                           | Rd         |

|                                                                                                                                       |  |              |
|---------------------------------------------------------------------------------------------------------------------------------------|--|--------------|
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| Einstell- und Prüfsystem für stellungsgebundene Gewinde<br>Setting and Inspection System for Threads with Specified Starting Position |  |              |
|                                                    |  | 605 - 610    |
| DECOM-Prüflabor im Hause EMUGE<br>DECOM Calibration Laboratory at EMUGE                                                               |  |              |

| Product<br>Finder          |
|----------------------------|
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| J                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ                         |
| UNJC, UNJF                 |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |



| Product Finder             |
|----------------------------|
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

### Allgemeines

Für das Metrische ISO-Gewinde ist in DIN ISO 1502 ein Lehrensystem festgelegt mit dem Zweck, eine uneingeschränkte Austauschbarkeit der Werkstückgewinde zu gewährleisten.

Es gelten folgende Grundsätze:

1. Der Hersteller darf kein Werkstückgewinde liefern, dessen Gewinde-Istmaß außerhalb der festgelegten Grenzen liegt (z.B. der Flankendurchmesser und der Paarungsflankendurchmesser).
2. Der Besteller darf kein Werkstückgewinde zurückweisen, dessen Gewinde-Istmaß innerhalb der festgelegten Grenzen liegt (z.B. der Flankendurchmesser und der Paarungsflankendurchmesser).

Natürlich werden heute in der modernen Gewindefertigung auch andere Prüfmethoden angewandt, z.B. Messen mit anzeigenden Messgeräten. Bei Anwendung anderer Methoden ist darauf zu achten, dass diese zu gleichen Ergebnissen führen.

**In Zweifelsfällen sind für das Metrische ISO-Gewinde die in der Norm DIN ISO 1502 empfohlenen Lehren für die Prüfung entscheidend. Für andere Gewindesysteme (z.B. Amerikanische Gewinde) gelten andere Lehrennormen.**

Wird in der Fertigung hauptsächlich durch Messen geprüft, so ist es unumgänglich, dass eine stichprobenmäßige Prüfung mit den genormten Lehren durchgeführt wird. Die Bezugstemperatur für die Maße der Lehren und Werkstücke ist 20 °C. Wird bei anderen Temperaturen geprüft, sind die Ausdehnungskoeffizienten zu berücksichtigen.

### Vorteile der EMUGE-Gewindelehren

- Gealterter Lehrenstahl, dadurch sehr maßstabil
- Härte deutlich über dem genormten Mindestwert
- Hartstoffschichten zur höheren Verschleißfestigkeit der Gut-Seite möglich
- Großes Lagersortiment an Standard- und Sondertoleranzen
- Kurze Lieferzeit
- Sonderkonstruktionen auf Anfrage
- Auf Wunsch mit Werkskalibrierschein (durch neutrales Prüflabor Fa. DECOM im Hause)
- Kostenfreie Beschriftung von kundenspezifischen Angaben bei Neu-Fertigung und Sonder-Anfertigung

### General information

For the Metric ISO thread, a gauge system is specified in DIN ISO 1502 for the purpose of securing the unlimited exchangeability of workpiece threads.

The following basic principles apply:

1. The manufacturer must not supply a workpiece thread the actual thread size of which is outside of the specified limits (e.g. pitch diameter or mating pitch diameter).
2. The buyer must not reject a workpiece thread the actual thread size of which is inside of the specified limits (e.g. pitch diameter or mating pitch diameter).

In modern thread production, there are of course other inspection methods also, e.g. measuring with dial-type measuring instruments. Whenever other methods are applied it is important to make sure that the same results are achieved.

**In any case of doubt, the gauges recommended in the standard DIN ISO 1502 will decide the result of the inspection for the Metric ISO thread.**

**For other thread systems (e.g. American threads), other gauge standards apply.**

If the inspection work in production is done mainly by measuring, it is still absolutely necessary to perform random sample inspection with the standardised gauges. The reference temperature for the gauge and workpiece dimensions is 20 °C. If inspections are done at other temperatures, the corresponding expansion coefficients have to be taken into account.

### Advantages of our EMUGE thread gauges

- Aged gauge steel, hence extremely true-to-dimension
- Hardness noticeably over the standardised minimum requirements
- Hard surface coatings for extra high wear resistance available on the go side
- Large stock of standard and special tolerances
- Short delivery
- Special designs available upon request
- Inspection certificates available upon request (issued by independent in-house inspection lab DECOM)
- Free-of-charge laser marking to customer's specifications on gauges coming from new production and specially produced gauges



## EMUGE-Gewindelehren – Prüftechnik in Perfektion

## EMUGE Thread gauges – Gauging technology to perfection

**Ab  $\varnothing 5,5$  mm** erhält jeder Gutlehrendorn eine **Schmutznut**, dadurch sichere Lehnung auch unter schwierigen Einsatzbedingungen

**Starting from dia. 5.5 mm** each go plug gauge is provided with a **dirt flute**, for safe gauging even under difficult conditions

**Unvollständige Gewindegänge** werden bis zum Beginn des Vollprofils **entfernt**, dadurch stabiler Gewindeanfang

**Incomplete threads are removed** until the beginning of the full thread, in order to create a stable thread start

**Lehrgreif mit 2 Beschriftungsflächen**

Ausreichend Platz für kundenspezifische Angaben (auf Wunsch auch von EMUGE durchführbar)

**Gauge handles with double surfaces for marking**, leaving sufficient space for customer's specific requirements (marking to be provided by EMUGE upon request)

**Gerändelter Griff**

(leichte Handhabung auch mit öligen Fingern)

**Knurled handles**

(safe handling even with greasy fingers)

**Eindeutige Ident-Nr. jeder Gewindelehre** stellt die notwendige EMUGE werksinterne Rückverfolgbarkeit sicher

**Individual ident no. for each single gauge** for safe tracing back to production at EMUGE

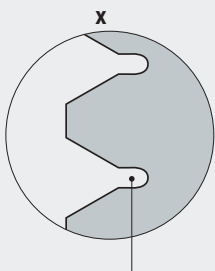
**Rote Farbkennzeichnung der Ausschussseite**  
**Red marking of the no-go side**

**Einführansatz**

zur verbesserten Einführung des Ausschlusslehrenkörpers

**Reduced thread start**

for easy insertion of the no-go gauge body



**Funktionsgerechte Kern-Freiarbeitung** der Ausschluss-Gewindelehren  
**Recessed minor thread diameter** of the no-go gauges for safe function

**$\leq \varnothing 40$  mm**

Form R nach DIN 2240-1 mit Einsteckkegel.  
Gut- und Ausschussseite auf einem Lehrgreif.

**$> \varnothing 40$  mm und  $\leq \varnothing 200$  mm**

Ähnlich DIN 2240-2 mit Kugelbefestigung.  
Gut- und Ausschussseite auf je einem Lehrgreif.  
Sicherer Halt bei Lehnung und Prüfung der Lehre im 3-Draht-Messverfahren.

**$\leq \varnothing 40$  mm**

Form R acc. DIN 2240-1 with fixing taper.  
Go and no-go side on one gauge handle.

**$> \varnothing 40$  mm und  $\leq \varnothing 200$  mm**

Made acc. DIN 2240-2 with ball fixture.  
Go and no-go side are mounted each on a single handle.  
Safe grip for gauging and checking of the gauge in a 3-wire measuring process.

Product Finder

M

MF

UNC

UNF

Rp, R, Rc

NPT, NPTF

BSW

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Glatt

Smooth

GT, TD

Zubehör

Accessories

PoCoSys

Kalibrieren

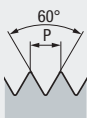
Calibration



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# M

DIN 13



Lehrenmaße nach DIN ISO 1502  
Gauge dimensions acc. DIN ISO 1502

Toleranz · Tolerance  
Beschichtung · Coating

|       |           |    |           |    |           |
|-------|-----------|----|-----------|----|-----------|
| 6H *) | 6H<br>TIN | 4H | 4H<br>TIN | 6G | 6G<br>TIN |
|-------|-----------|----|-----------|----|-----------|

|          | ø d <sub>1</sub><br>mm | P<br>mm | G-GR-LD       | G-GR-LD<br>TIN | G-GR-LD       | G-GR-LD<br>TIN | G-GR-LD       | G-GR-LD<br>TIN |
|----------|------------------------|---------|---------------|----------------|---------------|----------------|---------------|----------------|
| <b>M</b> | 1                      | 0,25    | L0100100.0010 |                |               |                |               |                |
|          | 1,1                    | 0,25    | L0100100.0011 |                |               |                |               |                |
|          | 1,2                    | 0,25    | L0100100.0012 |                |               |                |               |                |
|          | 1,4                    | 0,3     | L0100100.0014 |                |               |                |               |                |
|          | 1,6                    | 0,35    | L0100100.0016 |                |               |                |               |                |
|          | 1,7                    | 0,35    | L0100100.0017 |                |               |                |               |                |
|          | 1,8                    | 0,35    | L0100100.0018 |                |               |                |               |                |
|          | 2                      | 0,4     | L0100100.0020 |                | L0100110.0020 |                | L0100120.0020 |                |
|          | 2,2                    | 0,45    | L0100100.0022 |                | L0100110.0022 |                | L0100120.0022 |                |
|          | 2,3                    | 0,4     | L0100100.0023 |                |               |                |               |                |
|          | 2,5                    | 0,45    | L0100100.0025 |                | L0100110.0025 |                | L0100120.0025 |                |
|          | 2,6                    | 0,45    | L0100100.0026 |                |               |                |               |                |
|          | 3                      | 0,5     | L0100100.0030 | L0105100.0030  | L0100110.0030 | L0105110.0030  | L0100120.0030 | L0105120.0030  |
|          | 3,5                    | 0,6     | L0100100.0035 |                | L0100110.0035 |                | L0100120.0035 |                |
|          | 4                      | 0,7     | L0100100.0040 | L0105100.0040  | L0100110.0040 | L0105110.0040  | L0100120.0040 | L0105120.0040  |
|          | 4,5                    | 0,75    | L0100100.0045 |                |               |                |               |                |
|          | 5                      | 0,8     | L0100100.0050 | L0105100.0050  | L0100110.0050 | L0105110.0050  | L0100120.0050 | L0105120.0050  |
|          | 6                      | 1       | L0100100.0060 | L0105100.0060  | L0100110.0060 | L0105110.0060  | L0100120.0060 | L0105120.0060  |
|          | 7                      | 1       | L0100100.0070 |                |               |                |               |                |
|          | 8                      | 1,25    | L0100100.0080 | L0105100.0080  | L0100110.0080 | L0105110.0080  | L0100120.0080 | L0105120.0080  |
|          | 9                      | 1,25    | L0100100.0090 |                |               |                |               |                |
|          | 10                     | 1,5     | L0100100.0100 | L0105100.0100  | L0100110.0100 | L0105110.0100  | L0100120.0100 | L0105120.0100  |
|          | 11                     | 1,5     | L0100100.0111 |                |               |                |               |                |
|          | 12                     | 1,75    | L0100100.0112 | L0105100.0112  | L0100110.0112 | L0105110.0112  | L0100120.0112 | L0105120.0112  |
|          | 14                     | 2       | L0100100.0114 | L0105100.0114  | L0100110.0114 | L0105110.0114  | L0100120.0114 | L0105120.0114  |
|          | 16                     | 2       | L0100100.0116 | L0105100.0116  | L0100110.0116 | L0105110.0116  | L0100120.0116 | L0105120.0116  |
|          | 18                     | 2,5     | L0100100.0118 |                | L0100110.0118 |                | L0100120.0118 |                |
|          | 20                     | 2,5     | L0100100.0120 | L0105100.0120  | L0100110.0120 | L0105110.0120  | L0100120.0120 | L0105120.0120  |
|          | 22                     | 2,5     | L0100100.0122 |                | L0100110.0122 |                | L0100120.0122 |                |
|          | 24                     | 3       | L0100100.0124 | L0105100.0124  | L0100110.0124 | L0105110.0124  | L0100120.0124 | L0105120.0124  |
|          | 27                     | 3       | L0100100.0127 |                |               |                |               |                |
|          | 30                     | 3,5     | L0100100.0130 |                |               |                |               |                |
|          | 33                     | 3,5     | L0100100.0133 |                |               |                |               |                |
|          | 36                     | 4       | L0100100.0136 |                |               |                |               |                |
|          | 39                     | 4       | L0100100.0139 |                |               |                |               |                |
|          | 42                     | 4,5     |               |                |               |                |               |                |
|          | 45                     | 4,5     |               |                |               |                |               |                |
|          | 48                     | 5       |               |                |               |                |               |                |
|          | 52                     | 5       |               |                |               |                |               |                |
|          | 56                     | 5,5     |               |                |               |                |               |                |
|          | 60                     | 5,5     |               |                |               |                |               |                |
|          | 64                     | 6       |               |                |               |                |               |                |
|          | 68                     | 6       |               |                |               |                |               |                |

\*) ≤ M1,4 Tol. 5H



Glatte Kernloch-Grenzlehndorne  
siehe Seite 586

Smooth plug gauges go/no-go for thread  
holes, see page 586

|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|--|-----|
|  |  |  |  |  |  |  |  |     |
|  |  |  |  |  |  |  |  |     |
| 6E                                                                                | 6H                                                                                | 6H *)                                                                             | 6H<br>TIN                                                                         | 6H *)                                                                             |  |  |  |     |
|                                                                                   | LH                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |  |     |
| G-GR-LD                                                                           | G-GR-LD<br>LH                                                                     | G-GUT-LD                                                                          | G-GUT-LD<br>TIN                                                                   | G-AUS-LD                                                                          |  |  |  |     |
|                                                                                   |                                                                                   | L0120100.0010                                                                     |                                                                                   | L0140100.0010                                                                     |  |  |  | M 1 |
|                                                                                   |                                                                                   | L0120100.0011                                                                     |                                                                                   | L0140100.0011                                                                     |  |  |  | 1,1 |
|                                                                                   |                                                                                   | L0120100.0012                                                                     |                                                                                   | L0140100.0012                                                                     |  |  |  | 1,2 |
|                                                                                   |                                                                                   | L0120100.0014                                                                     |                                                                                   | L0140100.0014                                                                     |  |  |  | 1,4 |
|                                                                                   |                                                                                   | L0120100.0016                                                                     |                                                                                   | L0140100.0016                                                                     |  |  |  | 1,6 |
|                                                                                   |                                                                                   | L0120100.0017                                                                     |                                                                                   | L0140100.0017                                                                     |  |  |  | 1,7 |
|                                                                                   |                                                                                   | L0120100.0018                                                                     |                                                                                   | L0140100.0018                                                                     |  |  |  | 1,8 |
|                                                                                   | L0100150.0020                                                                     | L0120100.0020                                                                     |                                                                                   | L0140100.0020                                                                     |  |  |  | 2   |
|                                                                                   | L0100150.0022                                                                     | L0120100.0022                                                                     |                                                                                   | L0140100.0022                                                                     |  |  |  | 2,2 |
|                                                                                   | L0100150.0023                                                                     | L0120100.0023                                                                     |                                                                                   | L0140100.0023                                                                     |  |  |  | 2,3 |
|                                                                                   | L0100150.0025                                                                     | L0120100.0025                                                                     |                                                                                   | L0140100.0025                                                                     |  |  |  | 2,5 |
|                                                                                   | L0100150.0026                                                                     | L0120100.0026                                                                     |                                                                                   | L0140100.0026                                                                     |  |  |  | 2,6 |
| L0100130.0030                                                                     | L0100150.0030                                                                     | L0120100.0030                                                                     | L0125100.0030                                                                     | L0140100.0030                                                                     |  |  |  | 3   |
|                                                                                   | L0100150.0035                                                                     | L0120100.0035                                                                     |                                                                                   | L0140100.0035                                                                     |  |  |  | 3,5 |
| L0100130.0040                                                                     | L0100150.0040                                                                     | L0120100.0040                                                                     | L0125100.0040                                                                     | L0140100.0040                                                                     |  |  |  | 4   |
|                                                                                   |                                                                                   | L0120100.0045                                                                     |                                                                                   | L0140100.0045                                                                     |  |  |  | 4,5 |
| L0100130.0050                                                                     | L0100150.0050                                                                     | L0120100.0050                                                                     | L0125100.0050                                                                     | L0140100.0050                                                                     |  |  |  | 5   |
| L0100130.0060                                                                     | L0100150.0060                                                                     | L0120100.0060                                                                     | L0125100.0060                                                                     | L0140100.0060                                                                     |  |  |  | 6   |
|                                                                                   | L0100150.0070                                                                     | L0120100.0070                                                                     |                                                                                   | L0140100.0070                                                                     |  |  |  | 7   |
| L0100130.0080                                                                     | L0100150.0080                                                                     | L0120100.0080                                                                     | L0125100.0080                                                                     | L0140100.0080                                                                     |  |  |  | 8   |
|                                                                                   |                                                                                   | L0120100.0090                                                                     |                                                                                   | L0140100.0090                                                                     |  |  |  | 9   |
| L0100130.0100                                                                     | L0100150.0100                                                                     | L0120100.0100                                                                     | L0125100.0100                                                                     | L0140100.0100                                                                     |  |  |  | 10  |
|                                                                                   |                                                                                   | L0120100.0111                                                                     |                                                                                   | L0140100.0111                                                                     |  |  |  | 11  |
|                                                                                   | L0100150.0112                                                                     | L0120100.0112                                                                     | L0125100.0112                                                                     | L0140100.0112                                                                     |  |  |  | 12  |
|                                                                                   | L0100150.0114                                                                     | L0120100.0114                                                                     | L0125100.0114                                                                     | L0140100.0114                                                                     |  |  |  | 14  |
|                                                                                   | L0100150.0116                                                                     | L0120100.0116                                                                     | L0125100.0116                                                                     | L0140100.0116                                                                     |  |  |  | 16  |
|                                                                                   | L0100150.0118                                                                     | L0120100.0118                                                                     |                                                                                   | L0140100.0118                                                                     |  |  |  | 18  |
|                                                                                   | L0100150.0120                                                                     | L0120100.0120                                                                     | L0125100.0120                                                                     | L0140100.0120                                                                     |  |  |  | 20  |
|                                                                                   | L0100150.0122                                                                     | L0120100.0122                                                                     |                                                                                   | L0140100.0122                                                                     |  |  |  | 22  |
|                                                                                   | L0100150.0124                                                                     | L0120100.0124                                                                     | L0125100.0124                                                                     | L0140100.0124                                                                     |  |  |  | 24  |
|                                                                                   |                                                                                   | L0120100.0127                                                                     |                                                                                   | L0140100.0127                                                                     |  |  |  | 27  |
|                                                                                   |                                                                                   | L0120100.0130                                                                     |                                                                                   | L0140100.0130                                                                     |  |  |  | 30  |
|                                                                                   |                                                                                   | L0120100.0133                                                                     |                                                                                   | L0140100.0133                                                                     |  |  |  | 33  |
|                                                                                   |                                                                                   | L0120100.0136                                                                     |                                                                                   | L0140100.0136                                                                     |  |  |  | 36  |
|                                                                                   |                                                                                   | L0120100.0139                                                                     |                                                                                   | L0140100.0139                                                                     |  |  |  | 39  |
|                                                                                   |                                                                                   | L0120100.0142                                                                     |                                                                                   | L0140100.0142                                                                     |  |  |  | 42  |
|                                                                                   |                                                                                   | L0120100.0145                                                                     |                                                                                   | L0140100.0145                                                                     |  |  |  | 45  |
|                                                                                   |                                                                                   | L0120100.0148                                                                     |                                                                                   | L0140100.0148                                                                     |  |  |  | 48  |
|                                                                                   |                                                                                   | L0120100.0152                                                                     |                                                                                   | L0140100.0152                                                                     |  |  |  | 52  |
|                                                                                   |                                                                                   | L0120100.0156                                                                     |                                                                                   | L0140100.0156                                                                     |  |  |  | 56  |
|                                                                                   |                                                                                   | L0120100.0160                                                                     |                                                                                   | L0140100.0160                                                                     |  |  |  | 60  |
|                                                                                   |                                                                                   | L0120100.0164                                                                     |                                                                                   | L0140100.0164                                                                     |  |  |  | 64  |
|                                                                                   |                                                                                   | L0120100.0168                                                                     |                                                                                   | L0140100.0168                                                                     |  |  |  | 68  |

> ø 40 nur als Einzellehrdorne erhältlich (G-GUT-LD, G-AUS-LD)  
available only as separate plug gauges (G-GUT-LD, G-AUS-LD)

| Product<br>Finder          |
|----------------------------|
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
|                            |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |



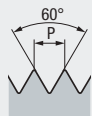
| Product Finder             |                                                                                                         |                                                                                   |                                                                                   |                                                                                    |                                                                                     |  |
|----------------------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
| M                          | <br><b>M</b><br>DIN 13 |   |   |    |   |  |
| MF                         |                                                                                                         |                                                                                   |                                                                                   |                                                                                    |                                                                                     |  |
| UNC                        |                                                                                                         |                                                                                   |                                                                                   |                                                                                    |                                                                                     |  |
| UNF                        |                                                                                                         |                                                                                   |                                                                                   |                                                                                    |                                                                                     |  |
| G                          |                                                                                                         |                                                                                   |                                                                                   |                                                                                    |                                                                                     |  |
| Rp, R, Rc                  |                                                                                                         |                                                                                   |                                                                                   |                                                                                    |                                                                                     |  |
| NPT, NPTF                  |                                                                                                         |                                                                                   |                                                                                   |                                                                                    |                                                                                     |  |
| BSW                        |                                                                                                         |                                                                                   |                                                                                   |                                                                                    |                                                                                     |  |
| Pg                         | Lehrenmaße nach DIN ISO 1502<br>Gauge dimensions acc. DIN ISO 1502                                      |  |  |  |  |  |
| MJ<br>UNJC, UNJF           | Toleranz · Tolerance<br>Beschichtung · Coating                                                          | 6g *)                                                                             | 4h                                                                                | 6e                                                                                 | 6g                                                                                  |  |
| EG (STI)                   |                                                                                                         |                                                                                   |                                                                                   |                                                                                    | LH                                                                                  |  |
| SELF-LOCK                  |                                                                                                         | G-GUT-LR                                                                          | G-GUT-LR                                                                          | G-GUT-LR                                                                           | G-GUT-LR<br>LH                                                                      |  |
| Tr, Tr-F<br>Rd             | <div> <div>ø d<sub>1</sub><br/>mm</div> <div>P<br/>mm</div> </div>                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |  |
| Glatt<br>Smooth            | M 1 0,25                                                                                                | L0200500.0010                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 1,1 0,25                                                                                                | L0200500.0011                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 1,2 0,25                                                                                                | L0200500.0012                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
| GT, TD                     | 1,4 0,3                                                                                                 | L0200500.0014                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 1,6 0,35                                                                                                | L0200500.0016                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 1,7 0,35                                                                                                | L0200500.0017                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
| Zubehör<br>Accessories     | 1,8 0,35                                                                                                | L0200500.0018                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 2 0,4                                                                                                   | L0200500.0020                                                                     | L0200510.0020                                                                     | L0200530.0020                                                                      | L0200550.0020                                                                       |  |
|                            | 2,2 0,45                                                                                                | L0200500.0022                                                                     | L0200510.0022                                                                     | L0200530.0022                                                                      | L0200550.0022                                                                       |  |
| PoCoSys                    | 2,3 0,4                                                                                                 | L0200500.0023                                                                     |                                                                                   |                                                                                    | L0200550.0023                                                                       |  |
|                            | 2,5 0,45                                                                                                | L0200500.0025                                                                     | L0200510.0025                                                                     | L0200530.0025                                                                      | L0200550.0025                                                                       |  |
|                            | 2,6 0,45                                                                                                | L0200500.0026                                                                     |                                                                                   |                                                                                    | L0200550.0026                                                                       |  |
| Kalibrieren<br>Calibration | 3 0,5                                                                                                   | L0200500.0030                                                                     | L0200510.0030                                                                     | L0200530.0030                                                                      | L0200550.0030                                                                       |  |
|                            | 3,5 0,6                                                                                                 | L0200500.0035                                                                     | L0200510.0035                                                                     | L0200530.0035                                                                      | L0200550.0035                                                                       |  |
|                            | 4 0,7                                                                                                   | L0200500.0040                                                                     | L0200510.0040                                                                     | L0200530.0040                                                                      | L0200550.0040                                                                       |  |
|                            | 4,5 0,75                                                                                                | L0200500.0045                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 5 0,8                                                                                                   | L0200500.0050                                                                     | L0200510.0050                                                                     | L0200530.0050                                                                      | L0200550.0050                                                                       |  |
|                            | 6 1                                                                                                     | L0200500.0060                                                                     | L0200510.0060                                                                     | L0200530.0060                                                                      | L0200550.0060                                                                       |  |
|                            | 7 1                                                                                                     | L0200500.0070                                                                     |                                                                                   |                                                                                    | L0200550.0070                                                                       |  |
|                            | 8 1,25                                                                                                  | L0200500.0080                                                                     | L0200510.0080                                                                     | L0200530.0080                                                                      | L0200550.0080                                                                       |  |
|                            | 9 1,25                                                                                                  | L0200500.0090                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 10 1,5                                                                                                  | L0200500.0100                                                                     | L0200510.0100                                                                     | L0200530.0100                                                                      | L0200550.0100                                                                       |  |
|                            | 11 1,5                                                                                                  | L0200500.0111                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 12 1,75                                                                                                 | L0200500.0112                                                                     | L0200510.0112                                                                     | L0200530.0112                                                                      | L0200550.0112                                                                       |  |
|                            | 14 2                                                                                                    | L0200500.0114                                                                     | L0200510.0114                                                                     | L0200530.0114                                                                      | L0200550.0114                                                                       |  |
|                            | 16 2                                                                                                    | L0200500.0116                                                                     | L0200510.0116                                                                     | L0200530.0116                                                                      | L0200550.0116                                                                       |  |
|                            | 18 2,5                                                                                                  | L0200500.0118                                                                     | L0200510.0118                                                                     | L0200530.0118                                                                      | L0200550.0118                                                                       |  |
|                            | 20 2,5                                                                                                  | L0200500.0120                                                                     | L0200510.0120                                                                     | L0200530.0120                                                                      | L0200550.0120                                                                       |  |
|                            | 22 2,5                                                                                                  | L0200500.0122                                                                     | L0200510.0122                                                                     | L0200530.0122                                                                      | L0200550.0122                                                                       |  |
|                            | 24 3                                                                                                    | L0200500.0124                                                                     | L0200510.0124                                                                     | L0200530.0124                                                                      | L0200550.0124                                                                       |  |
|                            | 27 3                                                                                                    | L0200500.0127                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 30 3,5                                                                                                  | L0200500.0130                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 33 3,5                                                                                                  | L0200500.0133                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 36 4                                                                                                    | L0200500.0136                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 39 4                                                                                                    | L0200500.0139                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 42 4,5                                                                                                  | L0200500.0142                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 45 4,5                                                                                                  | L0200500.0145                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 48 5                                                                                                    | L0200500.0148                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 52 5                                                                                                    | L0200500.0152                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 56 5,5                                                                                                  | L0200500.0156                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 60 5,5                                                                                                  | L0200500.0160                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 64 6                                                                                                    | L0200500.0164                                                                     |                                                                                   |                                                                                    |                                                                                     |  |
|                            | 68 6                                                                                                    | L0200500.0168                                                                     |                                                                                   |                                                                                    |                                                                                     |  |

\*) ≤ M1,4 Tol. 6h



**M**

DIN 13



Lehrenmaße nach DIN ISO 1502  
Gauge dimensions acc. DIN ISO 1502

Toleranz · Tolerance  
Beschichtung · Coating



6g \*)

4h

6e

6g

LH

G-AUS-LR

G-AUS-LR

G-AUS-LR

G-AUS-LR

LH

ø d<sub>1</sub>  
mm

P  
mm

| M | ø d <sub>1</sub><br>mm | P<br>mm | G-AUS-LR      | G-AUS-LR      | G-AUS-LR      | G-AUS-LR<br>LH |
|---|------------------------|---------|---------------|---------------|---------------|----------------|
|   | 1                      | 0,25    | L0300500.0010 |               |               |                |
|   | 1,1                    | 0,25    | L0300500.0011 |               |               |                |
|   | 1,2                    | 0,25    | L0300500.0012 |               |               |                |
|   | 1,4                    | 0,3     | L0300500.0014 |               |               |                |
|   | 1,6                    | 0,35    | L0300500.0016 |               |               |                |
|   | 1,7                    | 0,35    | L0300500.0017 |               |               |                |
|   | 1,8                    | 0,35    | L0300500.0018 |               |               |                |
|   | 2                      | 0,4     | L0300500.0020 | L0300510.0020 | L0300530.0020 | L0300550.0020  |
|   | 2,2                    | 0,45    | L0300500.0022 | L0300510.0022 | L0300530.0022 | L0300550.0022  |
|   | 2,3                    | 0,4     | L0300500.0023 |               |               | L0300550.0023  |
|   | 2,5                    | 0,45    | L0300500.0025 | L0300510.0025 | L0300530.0025 | L0300550.0025  |
|   | 2,6                    | 0,45    | L0300500.0026 |               |               | L0300550.0026  |
|   | 3                      | 0,5     | L0300500.0030 | L0300510.0030 | L0300530.0030 | L0300550.0030  |
|   | 3,5                    | 0,6     | L0300500.0035 | L0300510.0035 | L0300530.0035 | L0300550.0035  |
|   | 4                      | 0,7     | L0300500.0040 | L0300510.0040 | L0300530.0040 | L0300550.0040  |
|   | 4,5                    | 0,75    | L0300500.0045 |               |               |                |
|   | 5                      | 0,8     | L0300500.0050 | L0300510.0050 | L0300530.0050 | L0300550.0050  |
|   | 6                      | 1       | L0300500.0060 | L0300510.0060 | L0300530.0060 | L0300550.0060  |
|   | 7                      | 1       | L0300500.0070 |               |               | L0300550.0070  |
|   | 8                      | 1,25    | L0300500.0080 | L0300510.0080 | L0300530.0080 | L0300550.0080  |
|   | 9                      | 1,25    | L0300500.0090 |               |               |                |
|   | 10                     | 1,5     | L0300500.0100 | L0300510.0100 | L0300530.0100 | L0300550.0100  |
|   | 11                     | 1,5     | L0300500.0111 |               |               |                |
|   | 12                     | 1,75    | L0300500.0112 | L0300510.0112 | L0300530.0112 | L0300550.0112  |
|   | 14                     | 2       | L0300500.0114 | L0300510.0114 | L0300530.0114 | L0300550.0114  |
|   | 16                     | 2       | L0300500.0116 | L0300510.0116 | L0300530.0116 | L0300550.0116  |
|   | 18                     | 2,5     | L0300500.0118 | L0300510.0118 | L0300530.0118 | L0300550.0118  |
|   | 20                     | 2,5     | L0300500.0120 | L0300510.0120 | L0300530.0120 | L0300550.0120  |
|   | 22                     | 2,5     | L0300500.0122 | L0300510.0122 | L0300530.0122 | L0300550.0122  |
|   | 24                     | 3       | L0300500.0124 | L0300510.0124 | L0300530.0124 | L0300550.0124  |
|   | 27                     | 3       | L0300500.0127 |               |               |                |
|   | 30                     | 3,5     | L0300500.0130 |               |               |                |
|   | 33                     | 3,5     | L0300500.0133 |               |               |                |
|   | 36                     | 4       | L0300500.0136 |               |               |                |
|   | 39                     | 4       | L0300500.0139 |               |               |                |
|   | 42                     | 4,5     | L0300500.0142 |               |               |                |
|   | 45                     | 4,5     | L0300500.0145 |               |               |                |
|   | 48                     | 5       | L0300500.0148 |               |               |                |
|   | 52                     | 5       | L0300500.0152 |               |               |                |
|   | 56                     | 5,5     | L0300500.0156 |               |               |                |
|   | 60                     | 5,5     | L0300500.0160 |               |               |                |
|   | 64                     | 6       | L0300500.0164 |               |               |                |
|   | 68                     | 6       | L0300500.0168 |               |               |                |

\*) ≤ M1,4 Tol. 6h

Product  
Finder

M

MF

UNC

UNF

Rp, R, Rc

NPT, NPTF

BSW

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Glatt

Smooth

GT, TD

Zubehör

Accessories

PoCoSys

Kalibrieren

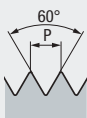
Calibration



|                         |
|-------------------------|
| Product Finder          |
| M                       |
| MF                      |
| UNC                     |
| UNF                     |
| G                       |
| Rp, R, Rc               |
| NPT, NPTF               |
| BSW                     |
| Pg                      |
| MJ                      |
| UNJC, UNJF              |
| EG (STI)                |
| SELF-LOCK               |
| Tr, Tr-F Rd             |
| Glatt Smooth            |
| GT, TD                  |
| Zubehör Accessories     |
| PoCoSys                 |
| Kalibrieren Calibration |

# MF

DIN 13



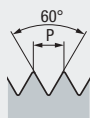
Lehrenmaße nach  
DIN ISO 1502  
Gauge dimensions  
acc. DIN ISO 1502

| Toleranz · Tolerance<br>Beschichtung · Coating |     |         | 6H            | 6H 1)<br>TIN   | 4H            | 6G            | 6H<br>LH      | 4H<br>LH      | 6G<br>LH      |
|------------------------------------------------|-----|---------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|
|                                                |     |         | G-GR-LD       | G-GR-LD<br>TIN | G-GR-LD       | G-GR-LD       | G-GR-LD<br>LH | G-GR-LD<br>LH | G-GR-LD<br>LH |
| ø d <sub>1</sub><br>mm                         |     | P<br>mm |               |                |               |               |               |               |               |
| <b>M</b>                                       | 2   | x 0,25  |               |                | L0100110.0186 |               |               |               |               |
|                                                | 2,2 | x 0,25  |               |                | L0100110.0189 |               |               |               |               |
|                                                | 2,3 | x 0,25  |               |                | L0100110.0192 |               |               |               |               |
|                                                | 2,5 | x 0,35  | L0100100.0196 |                |               |               |               |               |               |
|                                                | 2,6 | x 0,35  | L0100100.0199 |                |               |               |               |               |               |
|                                                | 3   | x 0,35  | L0100100.0202 |                |               |               | L0100150.0202 |               |               |
|                                                | 3,5 | x 0,35  | L0100100.0205 |                |               |               | L0100150.0205 |               |               |
|                                                | 4   | x 0,35  | L0100100.0209 |                |               |               | L0100150.0209 |               |               |
|                                                | 4   | x 0,5   | L0100100.0210 |                | L0100110.0210 | L0100120.0210 | L0100150.0210 |               |               |
|                                                | 4,5 | x 0,5   | L0100100.0214 |                |               |               |               |               |               |
|                                                | 5   | x 0,5   | L0100100.0218 |                | L0100110.0218 | L0100120.0218 | L0100150.0218 |               |               |
|                                                | 6   | x 0,5   | L0100100.0228 |                | L0100110.0228 | L0100120.0228 | L0100150.0228 |               |               |
|                                                | 6   | x 0,75  | L0100100.0229 |                | L0100110.0229 | L0100120.0229 | L0100150.0229 |               |               |
|                                                | 7   | x 0,75  | L0100100.0239 |                |               |               |               |               |               |
|                                                | 8   | x 0,5   | L0100100.0249 |                |               |               |               |               |               |
|                                                | 8   | x 0,75  | L0100100.0250 |                | L0100110.0250 | L0100120.0250 | L0100150.0250 |               |               |
|                                                | 8   | x 1     | L0100100.0251 | L0105100.0251  | L0100110.0251 | L0100120.0251 | L0100150.0251 | L0100160.0251 | L0100170.0251 |
|                                                | 9   | x 1     | L0100100.0263 |                | L0100110.0263 | L0100120.0263 | L0100150.0263 | L0100160.0263 | L0100170.0263 |
|                                                | 10  | x 0,75  | L0100100.0275 |                |               |               |               |               |               |
|                                                | 10  | x 1     | L0100100.0276 | L0105100.0276  | L0100110.0276 | L0100120.0276 | L0100150.0276 | L0100160.0276 | L0100170.0276 |
|                                                | 10  | x 1,25  | L0100100.0277 |                | L0100110.0277 | L0100120.0277 |               |               |               |
|                                                | 11  | x 1     | L0100100.0288 |                | L0100110.0288 | L0100120.0288 | L0100150.0288 | L0100160.0288 | L0100170.0288 |
|                                                | 12  | x 1     | L0100100.0301 | L0105100.0301  | L0100110.0301 | L0100120.0301 | L0100150.0301 | L0100160.0301 | L0100170.0301 |
|                                                | 12  | x 1,25  | L0100100.0302 |                |               |               |               |               |               |
|                                                | 12  | x 1,5   | L0100100.0303 | L0105100.0303  | L0100110.0303 | L0100120.0303 | L0100150.0303 | L0100160.0303 | L0100170.0303 |
|                                                | 13  | x 1     | L0100100.0315 |                | L0100110.0315 | L0100120.0315 | L0100150.0315 | L0100160.0315 | L0100170.0315 |
|                                                | 13  | x 1,5   | L0100100.0317 |                | L0100110.0317 | L0100120.0317 | L0100150.0317 | L0100160.0317 | L0100170.0317 |
|                                                | 14  | x 1     | L0100100.0329 |                | L0100110.0329 | L0100120.0329 | L0100150.0329 | L0100160.0329 | L0100170.0329 |
|                                                | 14  | x 1,25  | L0100100.0330 |                |               |               |               |               |               |
|                                                | 14  | x 1,5   | L0100100.0331 | L0105100.0331  | L0100110.0331 | L0100120.0331 | L0100150.0331 | L0100160.0331 | L0100170.0331 |
|                                                | 15  | x 1     | L0100100.0343 |                | L0100110.0343 | L0100120.0343 | L0100150.0343 | L0100160.0343 | L0100170.0343 |
|                                                | 15  | x 1,5   | L0100100.0345 |                | L0100110.0345 | L0100120.0345 | L0100150.0345 | L0100160.0345 | L0100170.0345 |
|                                                | 16  | x 1     | L0100100.0357 |                | L0100110.0357 | L0100120.0357 | L0100150.0357 | L0100160.0357 | L0100170.0357 |
|                                                | 16  | x 1,5   | L0100100.0359 | L0105100.0359  | L0100110.0359 | L0100120.0359 | L0100150.0359 | L0100160.0359 | L0100170.0359 |
|                                                | 17  | x 1     | L0100100.0372 |                | L0100110.0372 | L0100120.0372 | L0100150.0372 | L0100160.0372 | L0100170.0372 |
|                                                | 17  | x 1,5   | L0100100.0374 |                | L0100110.0374 | L0100120.0374 | L0100150.0374 | L0100160.0374 | L0100170.0374 |
|                                                | 18  | x 1     | L0100100.0388 |                | L0100110.0388 | L0100120.0388 | L0100150.0388 | L0100160.0388 | L0100170.0388 |
|                                                | 18  | x 1,5   | L0100100.0390 | L0105100.0390  | L0100110.0390 | L0100120.0390 | L0100150.0390 | L0100160.0390 | L0100170.0390 |
|                                                | 18  | x 2     | L0100100.0391 |                |               |               |               |               |               |
|                                                | 19  | x 1     | L0100100.0404 |                | L0100110.0404 | L0100120.0404 | L0100150.0404 | L0100160.0404 | L0100170.0404 |
|                                                | 20  | x 1     | L0100100.0420 |                | L0100110.0420 | L0100120.0420 | L0100150.0420 | L0100160.0420 | L0100170.0420 |
|                                                | 20  | x 1,5   | L0100100.0422 | L0105100.0422  | L0100110.0422 | L0100120.0422 | L0100150.0422 | L0100160.0422 | L0100170.0422 |
|                                                | 20  | x 2     | L0100100.0423 |                | L0100110.0423 | L0100120.0423 | L0100150.0423 | L0100160.0423 | L0100170.0423 |
|                                                | 21  | x 1     | L0100100.0428 |                | L0100110.0428 | L0100120.0428 | L0100150.0428 | L0100160.0428 | L0100170.0428 |
|                                                | 22  | x 1     | L0100100.0436 |                | L0100110.0436 | L0100120.0436 | L0100150.0436 | L0100160.0436 | L0100170.0436 |
|                                                | 22  | x 1,5   | L0100100.0438 |                | L0100110.0438 | L0100120.0438 | L0100150.0438 | L0100160.0438 | L0100170.0438 |
|                                                | 22  | x 2     | L0100100.0439 |                | L0100110.0439 | L0100120.0439 | L0100150.0439 | L0100160.0439 | L0100170.0439 |
|                                                | 23  | x 1     | L0100100.0443 |                | L0100110.0443 | L0100120.0443 | L0100150.0443 | L0100160.0443 | L0100170.0443 |
|                                                | 24  | x 1     | L0100100.0450 |                | L0100110.0450 | L0100120.0450 | L0100150.0450 | L0100160.0450 | L0100170.0450 |
|                                                | 24  | x 1,5   | L0100100.0452 |                | L0100110.0452 | L0100120.0452 | L0100150.0452 | L0100160.0452 | L0100170.0452 |
|                                                | 24  | x 2     | L0100100.0453 |                | L0100110.0453 | L0100120.0453 | L0100150.0453 | L0100160.0453 | L0100170.0453 |
|                                                | 25  | x 1     | L0100100.0456 |                | L0100110.0456 | L0100120.0456 | L0100150.0456 | L0100160.0456 | L0100170.0456 |
|                                                | 25  | x 1,5   | L0100100.0458 |                | L0100110.0458 | L0100120.0458 | L0100150.0458 | L0100160.0458 | L0100170.0458 |
|                                                | 25  | x 2     | L0100100.0459 |                | L0100110.0459 | L0100120.0459 | L0100150.0459 | L0100160.0459 | L0100170.0459 |
|                                                | 26  | x 1     | L0100100.0462 |                | L0100110.0462 | L0100120.0462 | L0100150.0462 | L0100160.0462 | L0100170.0462 |
|                                                | 26  | x 1,5   | L0100100.0464 |                | L0100110.0464 | L0100120.0464 | L0100150.0464 | L0100160.0464 | L0100170.0464 |
|                                                | 26  | x 2     | L0100100.0465 |                | L0100110.0465 | L0100120.0465 | L0100150.0465 | L0100160.0465 | L0100170.0465 |



MF

DIN 13



Lehrenmaße nach  
DIN ISO 1502  
Gauge dimensions  
acc. DIN ISO 1502

Toleranz · Tolerance  
Beschichtung · Coating

|                        |         |  | 6H            |                | 6H <sup>1)</sup><br>TIN |               | 4H            | 6G            | 6H            | 4H            | 6G            |
|------------------------|---------|--|---------------|----------------|-------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                        |         |  | G-GR-LD       | G-GR-LD<br>TIN | G-GR-LD                 | G-GR-LD       | G-GR-LD       | G-GR-LD<br>LH | G-GR-LD<br>LH | G-GR-LD<br>LH | G-GR-LD<br>LH |
| ø d <sub>1</sub><br>mm | P<br>mm |  |               |                |                         |               |               |               |               |               |               |
| M 27                   | x 1     |  | L0100100.0468 |                | L0100110.0468           | L0100120.0468 | L0100150.0468 | L0100160.0468 | L0100170.0468 |               |               |
| 27                     | x 1,5   |  | L0100100.0470 |                | L0100110.0470           | L0100120.0470 | L0100150.0470 | L0100160.0470 | L0100170.0470 |               |               |
| 27                     | x 2     |  | L0100100.0471 |                | L0100110.0471           | L0100120.0471 | L0100150.0471 | L0100160.0471 | L0100170.0471 |               |               |
| 28                     | x 1     |  | L0100100.0474 |                | L0100110.0474           | L0100120.0474 | L0100150.0474 | L0100160.0474 | L0100170.0474 |               |               |
| 28                     | x 1,5   |  | L0100100.0476 |                | L0100110.0476           | L0100120.0476 | L0100150.0476 | L0100160.0476 | L0100170.0476 |               |               |
| 28                     | x 2     |  | L0100100.0477 |                | L0100110.0477           | L0100120.0477 | L0100150.0477 | L0100160.0477 | L0100170.0477 |               |               |
| 30                     | x 1     |  | L0100100.0488 |                | L0100110.0488           | L0100120.0488 | L0100150.0488 | L0100160.0488 | L0100170.0488 |               |               |
| 30                     | x 1,5   |  | L0100100.0490 |                | L0100110.0490           | L0100120.0490 | L0100150.0490 | L0100160.0490 | L0100170.0490 |               |               |
| 30                     | x 2     |  | L0100100.0491 |                | L0100110.0491           | L0100120.0491 | L0100150.0491 | L0100160.0491 | L0100170.0491 |               |               |
| 30                     | x 3     |  | L0100100.0492 |                | L0100110.0492           | L0100120.0492 | L0100150.0492 | L0100160.0492 | L0100170.0492 |               |               |
| 32                     | x 1     |  | L0100100.0502 |                | L0100110.0502           | L0100120.0502 | L0100150.0502 | L0100160.0502 | L0100170.0502 |               |               |
| 32                     | x 1,5   |  | L0100100.0504 |                | L0100110.0504           | L0100120.0504 | L0100150.0504 | L0100160.0504 | L0100170.0504 |               |               |
| 32                     | x 2     |  | L0100100.0505 |                | L0100110.0505           | L0100120.0505 | L0100150.0505 | L0100160.0505 | L0100170.0505 |               |               |
| 33                     | x 1     |  | L0100100.0509 |                | L0100110.0509           | L0100120.0509 | L0100150.0509 | L0100160.0509 | L0100170.0509 |               |               |
| 33                     | x 1,5   |  | L0100100.0511 |                | L0100110.0511           | L0100120.0511 | L0100150.0511 | L0100160.0511 | L0100170.0511 |               |               |
| 33                     | x 2     |  | L0100100.0512 |                | L0100110.0512           | L0100120.0512 | L0100150.0512 | L0100160.0512 | L0100170.0512 |               |               |
| 33                     | x 3     |  | L0100100.0513 |                | L0100110.0513           | L0100120.0513 | L0100150.0513 | L0100160.0513 | L0100170.0513 |               |               |
| 34                     | x 1     |  | L0100100.0516 |                | L0100110.0516           | L0100120.0516 | L0100150.0516 | L0100160.0516 | L0100170.0516 |               |               |
| 34                     | x 1,5   |  | L0100100.0518 |                | L0100110.0518           | L0100120.0518 | L0100150.0518 | L0100160.0518 | L0100170.0518 |               |               |
| 34                     | x 2     |  | L0100100.0519 |                | L0100110.0519           | L0100120.0519 | L0100150.0519 | L0100160.0519 | L0100170.0519 |               |               |
| 35                     | x 1     |  | L0100100.0523 |                | L0100110.0523           | L0100120.0523 | L0100150.0523 | L0100160.0523 | L0100170.0523 |               |               |
| 35                     | x 1,5   |  | L0100100.0525 |                | L0100110.0525           | L0100120.0525 | L0100150.0525 | L0100160.0525 | L0100170.0525 |               |               |
| 35                     | x 2     |  | L0100100.0526 |                | L0100110.0526           | L0100120.0526 | L0100150.0526 | L0100160.0526 | L0100170.0526 |               |               |
| 36                     | x 1     |  | L0100100.0530 |                | L0100110.0530           | L0100120.0530 | L0100150.0530 | L0100160.0530 | L0100170.0530 |               |               |
| 36                     | x 1,5   |  | L0100100.0532 |                | L0100110.0532           | L0100120.0532 | L0100150.0532 | L0100160.0532 | L0100170.0532 |               |               |
| 36                     | x 2     |  | L0100100.0533 |                | L0100110.0533           | L0100120.0533 | L0100150.0533 | L0100160.0533 | L0100170.0533 |               |               |
| 36                     | x 3     |  | L0100100.0534 |                | L0100110.0534           | L0100120.0534 | L0100150.0534 | L0100160.0534 | L0100170.0534 |               |               |
| 38                     | x 1     |  | L0100100.0544 |                | L0100110.0544           | L0100120.0544 | L0100150.0544 | L0100160.0544 | L0100170.0544 |               |               |
| 38                     | x 1,5   |  | L0100100.0546 |                | L0100110.0546           | L0100120.0546 | L0100150.0546 | L0100160.0546 | L0100170.0546 |               |               |
| 38                     | x 2     |  | L0100100.0547 |                | L0100110.0547           | L0100120.0547 | L0100150.0547 | L0100160.0547 | L0100170.0547 |               |               |
| 39                     | x 1     |  | L0100100.0551 |                | L0100110.0551           | L0100120.0551 | L0100150.0551 | L0100160.0551 | L0100170.0551 |               |               |
| 39                     | x 1,5   |  | L0100100.0553 |                | L0100110.0553           | L0100120.0553 | L0100150.0553 | L0100160.0553 | L0100170.0553 |               |               |
| 39                     | x 2     |  | L0100100.0554 |                | L0100110.0554           | L0100120.0554 | L0100150.0554 | L0100160.0554 | L0100170.0554 |               |               |
| 39                     | x 3     |  | L0100100.0555 |                | L0100110.0555           | L0100120.0555 | L0100150.0555 | L0100160.0555 | L0100170.0555 |               |               |
| 40                     | x 1     |  | L0100100.0558 |                | L0100110.0558           | L0100120.0558 | L0100150.0558 | L0100160.0558 | L0100170.0558 |               |               |
| 40                     | x 1,5   |  | L0100100.0560 |                | L0100110.0560           | L0100120.0560 | L0100150.0560 | L0100160.0560 | L0100170.0560 |               |               |
| 40                     | x 2     |  | L0100100.0561 |                | L0100110.0561           | L0100120.0561 | L0100150.0561 | L0100160.0561 | L0100170.0561 |               |               |
| 40                     | x 3     |  | L0100100.0562 |                | L0100110.0562           | L0100120.0562 | L0100150.0562 | L0100160.0562 | L0100170.0562 |               |               |

> ø 40 nur als Einzellehrdorne erhältlich (G-GUT-LD, G-AUS-LD) siehe Seite 552 - 559  
available only as separate plug gauges (G-GUT-LD, G-AUS-LD), see page 552 - 559

<sup>1)</sup> Toleranz „4H“ und „6G“ auf Anfrage  
Tolerance “4H” and “6G” upon request

Product  
Finder

M

MF

UNC

UNF

Rp, R, Rc

NPT, NPTF

BSW

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Glatt

Smooth

GT, TD

Zubehör

Accessories

PoCoSys

Kalibrieren

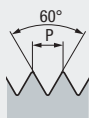
Calibration



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# MF

DIN 13



Lehrenmaße nach DIN ISO 1502  
Gauge dimensions acc. DIN ISO 1502

Toleranz · Tolerance  
Beschichtung · Coating

6H

6H

TIN

4H

6G

6H

LH

4H

LH

G-GUT-LD

G-GUT-LD

TIN

G-GUT-LD

G-GUT-LD

G-GUT-LD  
LH

G-GUT-LD  
LH

|          | ø d <sub>1</sub><br>mm |   | P<br>mm |               |               |               |               |               |               |
|----------|------------------------|---|---------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>M</b> | 2                      | x | 0,25    |               |               |               |               |               |               |
|          | 2,2                    | x | 0,25    |               |               |               |               |               |               |
|          | 2,3                    | x | 0,25    |               |               |               |               |               |               |
|          | 2,5                    | x | 0,35    | L0120100.0196 |               |               |               |               |               |
|          | 2,6                    | x | 0,35    | L0120100.0199 |               |               |               |               |               |
|          | 3                      | x | 0,35    | L0120100.0202 |               |               |               |               |               |
|          | 3,5                    | x | 0,35    | L0120100.0205 |               |               |               |               |               |
|          | 4                      | x | 0,35    | L0120100.0209 |               |               |               |               |               |
|          | 4                      | x | 0,5     | L0120100.0210 |               |               |               |               |               |
|          | 4,5                    | x | 0,5     | L0120100.0214 |               |               |               |               |               |
|          | 5                      | x | 0,5     | L0120100.0218 |               |               |               |               |               |
|          | 6                      | x | 0,5     | L0120100.0228 |               |               |               |               |               |
|          | 6                      | x | 0,75    | L0120100.0229 |               |               |               |               |               |
|          | 7                      | x | 0,75    | L0120100.0239 |               |               |               |               |               |
|          | 8                      | x | 0,5     | L0120100.0249 |               |               |               |               |               |
|          | 8                      | x | 0,75    | L0120100.0250 |               |               |               |               |               |
|          | 8                      | x | 1       | L0120100.0251 | L0125100.0251 | L0120110.0251 | L0120120.0251 | L0120150.0251 | L0120160.0251 |
|          | 9                      | x | 1       | L0120100.0263 |               | L0120110.0263 | L0120120.0263 | L0120150.0263 | L0120160.0263 |
|          | 10                     | x | 0,75    | L0120100.0275 |               |               |               |               |               |
|          | 10                     | x | 1       | L0120100.0276 | L0125100.0276 | L0120110.0276 | L0120120.0276 | L0120150.0276 | L0120160.0276 |
|          | 10                     | x | 1,25    | L0120100.0277 |               |               |               |               |               |
|          | 11                     | x | 1       | L0120100.0288 |               | L0120110.0288 | L0120120.0288 | L0120150.0288 | L0120160.0288 |
|          | 12                     | x | 1       | L0120100.0301 | L0125100.0301 | L0120110.0301 | L0120120.0301 | L0120150.0301 | L0120160.0301 |
|          | 12                     | x | 1,25    | L0120100.0302 |               |               |               |               |               |
|          | 12                     | x | 1,5     | L0120100.0303 | L0125100.0303 | L0120110.0303 | L0120120.0303 | L0120150.0303 | L0120160.0303 |
|          | 13                     | x | 1       | L0120100.0315 |               | L0120110.0315 | L0120120.0315 | L0120150.0315 | L0120160.0315 |
|          | 13                     | x | 1,5     | L0120100.0317 |               | L0120110.0317 | L0120120.0317 | L0120150.0317 | L0120160.0317 |
|          | 14                     | x | 1       | L0120100.0329 |               | L0120110.0329 | L0120120.0329 | L0120150.0329 | L0120160.0329 |
|          | 14                     | x | 1,25    | L0120100.0330 |               |               |               |               |               |
|          | 14                     | x | 1,5     | L0120100.0331 | L0125100.0331 | L0120110.0331 | L0120120.0331 | L0120150.0331 | L0120160.0331 |
|          | 15                     | x | 1       | L0120100.0343 |               | L0120110.0343 | L0120120.0343 | L0120150.0343 | L0120160.0343 |
|          | 15                     | x | 1,5     | L0120100.0345 |               | L0120110.0345 | L0120120.0345 | L0120150.0345 | L0120160.0345 |
|          | 16                     | x | 1       | L0120100.0357 |               | L0120110.0357 | L0120120.0357 | L0120150.0357 | L0120160.0357 |
|          | 16                     | x | 1,5     | L0120100.0359 | L0125100.0359 | L0120110.0359 | L0120120.0359 | L0120150.0359 | L0120160.0359 |
|          | 17                     | x | 1       | L0120100.0372 |               | L0120110.0372 | L0120120.0372 | L0120150.0372 | L0120160.0372 |
|          | 17                     | x | 1,5     | L0120100.0374 |               | L0120110.0374 | L0120120.0374 | L0120150.0374 | L0120160.0374 |
|          | 18                     | x | 1       | L0120100.0388 |               | L0120110.0388 | L0120120.0388 | L0120150.0388 | L0120160.0388 |
|          | 18                     | x | 1,5     | L0120100.0390 | L0125100.0390 | L0120110.0390 | L0120120.0390 | L0120150.0390 | L0120160.0390 |
|          | 18                     | x | 2       | L0120100.0391 |               |               |               |               |               |
|          | 19                     | x | 1       | L0120100.0404 |               | L0120110.0404 | L0120120.0404 | L0120150.0404 | L0120160.0404 |
|          | 20                     | x | 1       | L0120100.0420 |               | L0120110.0420 | L0120120.0420 | L0120150.0420 | L0120160.0420 |
|          | 20                     | x | 1,5     | L0120100.0422 | L0125100.0422 | L0120110.0422 | L0120120.0422 | L0120150.0422 | L0120160.0422 |
|          | 20                     | x | 2       | L0120100.0423 |               | L0120110.0423 | L0120120.0423 | L0120150.0423 | L0120160.0423 |
|          | 21                     | x | 1       | L0120100.0428 |               | L0120110.0428 | L0120120.0428 | L0120150.0428 | L0120160.0428 |
|          | 22                     | x | 1       | L0120100.0436 |               | L0120110.0436 | L0120120.0436 | L0120150.0436 | L0120160.0436 |
|          | 22                     | x | 1,5     | L0120100.0438 |               | L0120110.0438 | L0120120.0438 | L0120150.0438 | L0120160.0438 |
|          | 22                     | x | 2       | L0120100.0439 |               | L0120110.0439 | L0120120.0439 | L0120150.0439 | L0120160.0439 |
|          | 23                     | x | 1       | L0120100.0443 |               | L0120110.0443 | L0120120.0443 | L0120150.0443 | L0120160.0443 |
|          | 24                     | x | 1       | L0120100.0450 |               | L0120110.0450 | L0120120.0450 | L0120150.0450 | L0120160.0450 |
|          | 24                     | x | 1,5     | L0120100.0452 |               | L0120110.0452 | L0120120.0452 | L0120150.0452 | L0120160.0452 |
|          | 24                     | x | 2       | L0120100.0453 |               | L0120110.0453 | L0120120.0453 | L0120150.0453 | L0120160.0453 |
|          | 25                     | x | 1       | L0120100.0456 |               | L0120110.0456 | L0120120.0456 | L0120150.0456 | L0120160.0456 |
|          | 25                     | x | 1,5     | L0120100.0458 |               | L0120110.0458 | L0120120.0458 | L0120150.0458 | L0120160.0458 |
|          | 25                     | x | 2       | L0120100.0459 |               | L0120110.0459 | L0120120.0459 | L0120150.0459 | L0120160.0459 |
|          | 26                     | x | 1       | L0120100.0462 |               | L0120110.0462 | L0120120.0462 | L0120150.0462 | L0120160.0462 |
|          | 26                     | x | 1,5     | L0120100.0464 |               | L0120110.0464 | L0120120.0464 | L0120150.0464 | L0120160.0464 |
|          | 26                     | x | 2       | L0120100.0465 |               | L0120110.0465 | L0120120.0465 | L0120150.0465 | L0120160.0465 |





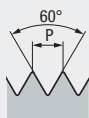
|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# MF

DIN 13



Lehrenmaße nach DIN ISO 1502  
Gauge dimensions acc. DIN ISO 1502

Toleranz · Tolerance  
Beschichtung · Coating

6H

6H

TIN

4H

6G

LH

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|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|--|
|  |  |  |  |  |  |  |          |  |
|  |  |  |  |  |  |  |          |  |
| 6G                                                                                | 6H                                                                                | 4H                                                                                | 6G                                                                                | 6H                                                                                | 4H                                                                                | 6G                                                                                  |          |  |
| LH                                                                                |                                                                                   |                                                                                   |                                                                                   | LH                                                                                | LH                                                                                | LH                                                                                  |          |  |
| G-GUT-LD<br>LH                                                                    | G-AUS-LD                                                                          | G-AUS-LD                                                                          | G-AUS-LD                                                                          | G-AUS-LD<br>LH                                                                    | G-AUS-LD<br>LH                                                                    | G-AUS-LD<br>LH                                                                      |          |  |
| L0120170.0468                                                                     | L0140100.0468                                                                     | L0140110.0468                                                                     | L0140120.0468                                                                     | L0140150.0468                                                                     | L0140160.0468                                                                     | L0140170.0468                                                                       | M 27 x 1 |  |
| L0120170.0470                                                                     | L0140100.0470                                                                     | L0140110.0470                                                                     | L0140120.0470                                                                     | L0140150.0470                                                                     | L0140160.0470                                                                     | L0140170.0470                                                                       | 27 x 1,5 |  |
| L0120170.0471                                                                     | L0140100.0471                                                                     | L0140110.0471                                                                     | L0140120.0471                                                                     | L0140150.0471                                                                     | L0140160.0471                                                                     | L0140170.0471                                                                       | 27 x 2   |  |
| L0120170.0474                                                                     | L0140100.0474                                                                     | L0140110.0474                                                                     | L0140120.0474                                                                     | L0140150.0474                                                                     | L0140160.0474                                                                     | L0140170.0474                                                                       | 28 x 1   |  |
| L0120170.0476                                                                     | L0140100.0476                                                                     | L0140110.0476                                                                     | L0140120.0476                                                                     | L0140150.0476                                                                     | L0140160.0476                                                                     | L0140170.0476                                                                       | 28 x 1,5 |  |
| L0120170.0477                                                                     | L0140100.0477                                                                     | L0140110.0477                                                                     | L0140120.0477                                                                     | L0140150.0477                                                                     | L0140160.0477                                                                     | L0140170.0477                                                                       | 28 x 2   |  |
| L0120170.0488                                                                     | L0140100.0488                                                                     | L0140110.0488                                                                     | L0140120.0488                                                                     | L0140150.0488                                                                     | L0140160.0488                                                                     | L0140170.0488                                                                       | 30 x 1   |  |
| L0120170.0490                                                                     | L0140100.0490                                                                     | L0140110.0490                                                                     | L0140120.0490                                                                     | L0140150.0490                                                                     | L0140160.0490                                                                     | L0140170.0490                                                                       | 30 x 1,5 |  |
| L0120170.0491                                                                     | L0140100.0491                                                                     | L0140110.0491                                                                     | L0140120.0491                                                                     | L0140150.0491                                                                     | L0140160.0491                                                                     | L0140170.0491                                                                       | 30 x 2   |  |
| L0120170.0492                                                                     | L0140100.0492                                                                     | L0140110.0492                                                                     | L0140120.0492                                                                     | L0140150.0492                                                                     | L0140160.0492                                                                     | L0140170.0492                                                                       | 30 x 3   |  |
| L0120170.0502                                                                     | L0140100.0502                                                                     | L0140110.0502                                                                     | L0140120.0502                                                                     | L0140150.0502                                                                     | L0140160.0502                                                                     | L0140170.0502                                                                       | 32 x 1   |  |
| L0120170.0504                                                                     | L0140100.0504                                                                     | L0140110.0504                                                                     | L0140120.0504                                                                     | L0140150.0504                                                                     | L0140160.0504                                                                     | L0140170.0504                                                                       | 32 x 1,5 |  |
| L0120170.0505                                                                     | L0140100.0505                                                                     | L0140110.0505                                                                     | L0140120.0505                                                                     | L0140150.0505                                                                     | L0140160.0505                                                                     | L0140170.0505                                                                       | 32 x 2   |  |
| L0120170.0509                                                                     | L0140100.0509                                                                     | L0140110.0509                                                                     | L0140120.0509                                                                     | L0140150.0509                                                                     | L0140160.0509                                                                     | L0140170.0509                                                                       | 33 x 1   |  |
| L0120170.0511                                                                     | L0140100.0511                                                                     | L0140110.0511                                                                     | L0140120.0511                                                                     | L0140150.0511                                                                     | L0140160.0511                                                                     | L0140170.0511                                                                       | 33 x 1,5 |  |
| L0120170.0512                                                                     | L0140100.0512                                                                     | L0140110.0512                                                                     | L0140120.0512                                                                     | L0140150.0512                                                                     | L0140160.0512                                                                     | L0140170.0512                                                                       | 33 x 2   |  |
| L0120170.0513                                                                     | L0140100.0513                                                                     | L0140110.0513                                                                     | L0140120.0513                                                                     | L0140150.0513                                                                     | L0140160.0513                                                                     | L0140170.0513                                                                       | 33 x 3   |  |
| L0120170.0516                                                                     | L0140100.0516                                                                     | L0140110.0516                                                                     | L0140120.0516                                                                     | L0140150.0516                                                                     | L0140160.0516                                                                     | L0140170.0516                                                                       | 34 x 1   |  |
| L0120170.0518                                                                     | L0140100.0518                                                                     | L0140110.0518                                                                     | L0140120.0518                                                                     | L0140150.0518                                                                     | L0140160.0518                                                                     | L0140170.0518                                                                       | 34 x 1,5 |  |
| L0120170.0519                                                                     | L0140100.0519                                                                     | L0140110.0519                                                                     | L0140120.0519                                                                     | L0140150.0519                                                                     | L0140160.0519                                                                     | L0140170.0519                                                                       | 34 x 2   |  |
| L0120170.0523                                                                     | L0140100.0523                                                                     | L0140110.0523                                                                     | L0140120.0523                                                                     | L0140150.0523                                                                     | L0140160.0523                                                                     | L0140170.0523                                                                       | 35 x 1   |  |
| L0120170.0525                                                                     | L0140100.0525                                                                     | L0140110.0525                                                                     | L0140120.0525                                                                     | L0140150.0525                                                                     | L0140160.0525                                                                     | L0140170.0525                                                                       | 35 x 1,5 |  |
| L0120170.0526                                                                     | L0140100.0526                                                                     | L0140110.0526                                                                     | L0140120.0526                                                                     | L0140150.0526                                                                     | L0140160.0526                                                                     | L0140170.0526                                                                       | 35 x 2   |  |
| L0120170.0530                                                                     | L0140100.0530                                                                     | L0140110.0530                                                                     | L0140120.0530                                                                     | L0140150.0530                                                                     | L0140160.0530                                                                     | L0140170.0530                                                                       | 36 x 1   |  |
| L0120170.0532                                                                     | L0140100.0532                                                                     | L0140110.0532                                                                     | L0140120.0532                                                                     | L0140150.0532                                                                     | L0140160.0532                                                                     | L0140170.0532                                                                       | 36 x 1,5 |  |
| L0120170.0533                                                                     | L0140100.0533                                                                     | L0140110.0533                                                                     | L0140120.0533                                                                     | L0140150.0533                                                                     | L0140160.0533                                                                     | L0140170.0533                                                                       | 36 x 2   |  |
| L0120170.0534                                                                     | L0140100.0534                                                                     | L0140110.0534                                                                     | L0140120.0534                                                                     | L0140150.0534                                                                     | L0140160.0534                                                                     | L0140170.0534                                                                       | 36 x 3   |  |
| L0120170.0544                                                                     | L0140100.0544                                                                     | L0140110.0544                                                                     | L0140120.0544                                                                     | L0140150.0544                                                                     | L0140160.0544                                                                     | L0140170.0544                                                                       | 38 x 1   |  |
| L0120170.0546                                                                     | L0140100.0546                                                                     | L0140110.0546                                                                     | L0140120.0546                                                                     | L0140150.0546                                                                     | L0140160.0546                                                                     | L0140170.0546                                                                       | 38 x 1,5 |  |
| L0120170.0547                                                                     | L0140100.0547                                                                     | L0140110.0547                                                                     | L0140120.0547                                                                     | L0140150.0547                                                                     | L0140160.0547                                                                     | L0140170.0547                                                                       | 38 x 2   |  |
| L0120170.0551                                                                     | L0140100.0551                                                                     | L0140110.0551                                                                     | L0140120.0551                                                                     | L0140150.0551                                                                     | L0140160.0551                                                                     | L0140170.0551                                                                       | 39 x 1   |  |
| L0120170.0553                                                                     | L0140100.0553                                                                     | L0140110.0553                                                                     | L0140120.0553                                                                     | L0140150.0553                                                                     | L0140160.0553                                                                     | L0140170.0553                                                                       | 39 x 1,5 |  |
| L0120170.0554                                                                     | L0140100.0554                                                                     | L0140110.0554                                                                     | L0140120.0554                                                                     | L0140150.0554                                                                     | L0140160.0554                                                                     | L0140170.0554                                                                       | 39 x 2   |  |
| L0120170.0555                                                                     | L0140100.0555                                                                     | L0140110.0555                                                                     | L0140120.0555                                                                     | L0140150.0555                                                                     | L0140160.0555                                                                     | L0140170.0555                                                                       | 39 x 3   |  |
| L0120170.0558                                                                     | L0140100.0558                                                                     | L0140110.0558                                                                     | L0140120.0558                                                                     | L0140150.0558                                                                     | L0140160.0558                                                                     | L0140170.0558                                                                       | 40 x 1   |  |
| L0120170.0560                                                                     | L0140100.0560                                                                     | L0140110.0560                                                                     | L0140120.0560                                                                     | L0140150.0560                                                                     | L0140160.0560                                                                     | L0140170.0560                                                                       | 40 x 1,5 |  |
| L0120170.0561                                                                     | L0140100.0561                                                                     | L0140110.0561                                                                     | L0140120.0561                                                                     | L0140150.0561                                                                     | L0140160.0561                                                                     | L0140170.0561                                                                       | 40 x 2   |  |
| L0120170.0562                                                                     | L0140100.0562                                                                     | L0140110.0562                                                                     | L0140120.0562                                                                     | L0140150.0562                                                                     | L0140160.0562                                                                     | L0140170.0562                                                                       | 40 x 3   |  |
| L0120170.0572                                                                     | L0140100.0572                                                                     | L0140110.0572                                                                     | L0140120.0572                                                                     | L0140150.0572                                                                     | L0140160.0572                                                                     | L0140170.0572                                                                       | 42 x 1   |  |
| L0120170.0574                                                                     | L0140100.0574                                                                     | L0140110.0574                                                                     | L0140120.0574                                                                     | L0140150.0574                                                                     | L0140160.0574                                                                     | L0140170.0574                                                                       | 42 x 1,5 |  |
| L0120170.0575                                                                     | L0140100.0575                                                                     | L0140110.0575                                                                     | L0140120.0575                                                                     | L0140150.0575                                                                     | L0140160.0575                                                                     | L0140170.0575                                                                       | 42 x 2   |  |
| L0120170.0576                                                                     | L0140100.0576                                                                     | L0140110.0576                                                                     | L0140120.0576                                                                     | L0140150.0576                                                                     | L0140160.0576                                                                     | L0140170.0576                                                                       | 42 x 3   |  |
| L0120170.0593                                                                     | L0140100.0593                                                                     | L0140110.0593                                                                     | L0140120.0593                                                                     | L0140150.0593                                                                     | L0140160.0593                                                                     | L0140170.0593                                                                       | 45 x 1   |  |
| L0120170.0595                                                                     | L0140100.0595                                                                     | L0140110.0595                                                                     | L0140120.0595                                                                     | L0140150.0595                                                                     | L0140160.0595                                                                     | L0140170.0595                                                                       | 45 x 1,5 |  |
| L0120170.0596                                                                     | L0140100.0596                                                                     | L0140110.0596                                                                     | L0140120.0596                                                                     | L0140150.0596                                                                     | L0140160.0596                                                                     | L0140170.0596                                                                       | 45 x 2   |  |
| L0120170.0597                                                                     | L0140100.0597                                                                     | L0140110.0597                                                                     | L0140120.0597                                                                     | L0140150.0597                                                                     | L0140160.0597                                                                     | L0140170.0597                                                                       | 45 x 3   |  |
| L0120170.0614                                                                     | L0140100.0614                                                                     | L0140110.0614                                                                     | L0140120.0614                                                                     | L0140150.0614                                                                     | L0140160.0614                                                                     | L0140170.0614                                                                       | 48 x 1   |  |
| L0120170.0616                                                                     | L0140100.0616                                                                     | L0140110.0616                                                                     | L0140120.0616                                                                     | L0140150.0616                                                                     | L0140160.0616                                                                     | L0140170.0616                                                                       | 48 x 1,5 |  |
| L0120170.0617                                                                     | L0140100.0617                                                                     | L0140110.0617                                                                     | L0140120.0617                                                                     | L0140150.0617                                                                     | L0140160.0617                                                                     | L0140170.0617                                                                       | 48 x 2   |  |
| L0120170.0618                                                                     | L0140100.0618                                                                     | L0140110.0618                                                                     | L0140120.0618                                                                     | L0140150.0618                                                                     | L0140160.0618                                                                     | L0140170.0618                                                                       | 48 x 3   |  |
| L0120170.0628                                                                     | L0140100.0628                                                                     | L0140110.0628                                                                     | L0140120.0628                                                                     | L0140150.0628                                                                     | L0140160.0628                                                                     | L0140170.0628                                                                       | 50 x 1   |  |
| L0120170.0630                                                                     | L0140100.0630                                                                     | L0140110.0630                                                                     | L0140120.0630                                                                     | L0140150.0630                                                                     | L0140160.0630                                                                     | L0140170.0630                                                                       | 50 x 1,5 |  |
| L0120170.0631                                                                     | L0140100.0631                                                                     | L0140110.0631                                                                     | L0140120.0631                                                                     | L0140150.0631                                                                     | L0140160.0631                                                                     | L0140170.0631                                                                       | 50 x 2   |  |
| L0120170.0632                                                                     | L0140100.0632                                                                     | L0140110.0632                                                                     | L0140120.0632                                                                     | L0140150.0632                                                                     | L0140160.0632                                                                     | L0140170.0632                                                                       | 50 x 3   |  |
| L0120170.0642                                                                     | L0140100.0642                                                                     | L0140110.0642                                                                     | L0140120.0642                                                                     | L0140150.0642                                                                     | L0140160.0642                                                                     | L0140170.0642                                                                       | 52 x 1   |  |
| L0120170.0644                                                                     | L0140100.0644                                                                     | L0140110.0644                                                                     | L0140120.0644                                                                     | L0140150.0644                                                                     | L0140160.0644                                                                     | L0140170.0644                                                                       | 52 x 1,5 |  |
| L0120170.0645                                                                     | L0140100.0645                                                                     | L0140110.0645                                                                     | L0140120.0645                                                                     | L0140150.0645                                                                     | L0140160.0645                                                                     | L0140170.0645                                                                       | 52 x 2   |  |

Product  
Finder

M

MF

UNC

UNF

Rp, R, Rc

NPT, NPTF

BSW

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Glatt

Smooth

GT, TD

Zubehör

Accessories

PoCoSys

Kalibrieren

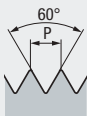
Calibration



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# MF

DIN 13



Lehrenmaße nach DIN ISO 1502  
Gauge dimensions acc. DIN ISO 1502

Toleranz · Tolerance  
Beschichtung · Coating

6H

6H

TIN

4H

6G

6H

LH

4H

LH

G-GUT-LD

G-GUT-LD

TIN

G-GUT-LD

G-GUT-LD

G-GUT-LD  
LH

G-GUT-LD  
LH

|          | ø d <sub>1</sub><br>mm | P<br>mm |               |  |               |               |               |
|----------|------------------------|---------|---------------|--|---------------|---------------|---------------|
| <b>M</b> | 52 x 3                 |         | L0120100.0646 |  | L0120110.0646 | L0120120.0646 | L0120150.0646 |
|          | 55 x 1                 |         | L0120100.0653 |  | L0120110.0653 | L0120120.0653 | L0120150.0653 |
|          | 55 x 1,5               |         | L0120100.0654 |  | L0120110.0654 | L0120120.0654 | L0120150.0654 |
|          | 55 x 2                 |         | L0120100.0655 |  | L0120110.0655 | L0120120.0655 | L0120150.0655 |
|          | 55 x 3                 |         | L0120100.0656 |  | L0120110.0656 | L0120120.0656 | L0120150.0656 |
|          | 56 x 1                 |         | L0120100.0658 |  | L0120110.0658 | L0120120.0658 | L0120150.0658 |
|          | 56 x 1,5               |         | L0120100.0659 |  | L0120110.0659 | L0120120.0659 | L0120150.0659 |
|          | 56 x 2                 |         | L0120100.0660 |  | L0120110.0660 | L0120120.0660 | L0120150.0660 |
|          | 56 x 3                 |         | L0120100.0661 |  | L0120110.0661 | L0120120.0661 | L0120150.0661 |
|          | 58 x 1                 |         | L0120100.0663 |  | L0120110.0663 | L0120120.0663 | L0120150.0663 |
|          | 58 x 1,5               |         | L0120100.0664 |  | L0120110.0664 | L0120120.0664 | L0120150.0664 |
|          | 58 x 2                 |         | L0120100.0665 |  | L0120110.0665 | L0120120.0665 | L0120150.0665 |
|          | 58 x 3                 |         | L0120100.0666 |  | L0120110.0666 | L0120120.0666 | L0120150.0666 |
|          | 60 x 1                 |         | L0120100.0668 |  | L0120110.0668 | L0120120.0668 | L0120150.0668 |
|          | 60 x 1,5               |         | L0120100.0669 |  | L0120110.0669 | L0120120.0669 | L0120150.0669 |
|          | 60 x 2                 |         | L0120100.0670 |  | L0120110.0670 | L0120120.0670 | L0120150.0670 |
|          | 60 x 3                 |         | L0120100.0671 |  | L0120110.0671 | L0120120.0671 | L0120150.0671 |
|          | 62 x 1                 |         | L0120100.0673 |  | L0120110.0673 | L0120120.0673 | L0120150.0673 |
|          | 62 x 1,5               |         | L0120100.0674 |  | L0120110.0674 | L0120120.0674 | L0120150.0674 |
|          | 62 x 2                 |         | L0120100.0675 |  | L0120110.0675 | L0120120.0675 | L0120150.0675 |
|          | 62 x 3                 |         | L0120100.0676 |  | L0120110.0676 | L0120120.0676 | L0120150.0676 |
|          | 64 x 1                 |         | L0120100.0678 |  | L0120110.0678 | L0120120.0678 | L0120150.0678 |
|          | 64 x 1,5               |         | L0120100.0679 |  | L0120110.0679 | L0120120.0679 | L0120150.0679 |
|          | 64 x 2                 |         | L0120100.0680 |  | L0120110.0680 | L0120120.0680 | L0120150.0680 |
|          | 64 x 3                 |         | L0120100.0681 |  | L0120110.0681 | L0120120.0681 | L0120150.0681 |
|          | 65 x 1                 |         | L0120100.0683 |  | L0120110.0683 | L0120120.0683 | L0120150.0683 |
|          | 65 x 1,5               |         | L0120100.0684 |  | L0120110.0684 | L0120120.0684 | L0120150.0684 |
|          | 65 x 2                 |         | L0120100.0685 |  | L0120110.0685 | L0120120.0685 | L0120150.0685 |
|          | 65 x 3                 |         | L0120100.0686 |  | L0120110.0686 | L0120120.0686 | L0120150.0686 |
|          | 68 x 1                 |         | L0120100.0688 |  | L0120110.0688 | L0120120.0688 | L0120150.0688 |
|          | 68 x 1,5               |         | L0120100.0689 |  | L0120110.0689 | L0120120.0689 | L0120150.0689 |
|          | 68 x 2                 |         | L0120100.0690 |  | L0120110.0690 | L0120120.0690 | L0120150.0690 |
|          | 68 x 3                 |         | L0120100.0691 |  | L0120110.0691 | L0120120.0691 | L0120150.0691 |
|          | 70 x 1                 |         | L0120100.0693 |  | L0120110.0693 | L0120120.0693 | L0120150.0693 |
|          | 70 x 1,5               |         | L0120100.0694 |  | L0120110.0694 | L0120120.0694 | L0120150.0694 |
|          | 70 x 2                 |         | L0120100.0695 |  | L0120110.0695 | L0120120.0695 | L0120150.0695 |
|          | 70 x 3                 |         | L0120100.0696 |  | L0120110.0696 | L0120120.0696 | L0120150.0696 |
|          | 72 x 1                 |         | L0120100.0699 |  | L0120110.0699 | L0120120.0699 | L0120150.0699 |
|          | 72 x 1,5               |         | L0120100.0700 |  | L0120110.0700 | L0120120.0700 | L0120150.0700 |
|          | 72 x 2                 |         | L0120100.0701 |  | L0120110.0701 | L0120120.0701 | L0120150.0701 |
|          | 72 x 3                 |         | L0120100.0702 |  | L0120110.0702 | L0120120.0702 | L0120150.0702 |
|          | 75 x 1                 |         | L0120100.0705 |  | L0120110.0705 | L0120120.0705 | L0120150.0705 |
|          | 75 x 1,5               |         | L0120100.0706 |  | L0120110.0706 | L0120120.0706 | L0120150.0706 |
|          | 75 x 2                 |         | L0120100.0707 |  | L0120110.0707 | L0120120.0707 | L0120150.0707 |
|          | 75 x 3                 |         | L0120100.0708 |  | L0120110.0708 | L0120120.0708 | L0120150.0708 |
|          | 76 x 1                 |         | L0120100.0711 |  | L0120110.0711 | L0120120.0711 | L0120150.0711 |
|          | 76 x 1,5               |         | L0120100.0712 |  | L0120110.0712 | L0120120.0712 | L0120150.0712 |
|          | 76 x 2                 |         | L0120100.0713 |  | L0120110.0713 | L0120120.0713 | L0120150.0713 |
|          | 76 x 3                 |         | L0120100.0714 |  | L0120110.0714 | L0120120.0714 | L0120150.0714 |
|          | 78 x 1                 |         | L0120100.0717 |  | L0120110.0717 | L0120120.0717 | L0120150.0717 |
|          | 78 x 1,5               |         | L0120100.0718 |  | L0120110.0718 | L0120120.0718 | L0120150.0718 |
|          | 78 x 2                 |         | L0120100.0719 |  | L0120110.0719 | L0120120.0719 | L0120150.0719 |
|          | 80 x 1                 |         | L0120100.0723 |  | L0120110.0723 | L0120120.0723 | L0120150.0723 |
|          | 80 x 1,5               |         | L0120100.0724 |  | L0120110.0724 | L0120120.0724 | L0120150.0724 |
|          | 80 x 2                 |         | L0120100.0725 |  | L0120110.0725 | L0120120.0725 | L0120150.0725 |
|          | 80 x 3                 |         | L0120100.0726 |  | L0120110.0726 | L0120120.0726 | L0120150.0726 |
|          | 82 x 1,5               |         | L0120100.0729 |  | L0120110.0729 | L0120120.0729 | L0120150.0729 |





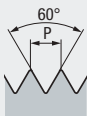
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |          |  |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|--|
|  |  |  |  |  |  |  |          |  |
|  |  |  |  |  |  |  |          |  |
| 6G                                                                                | 6H                                                                                | 4H                                                                                | 6G                                                                                | 6H                                                                                | 4H                                                                                | 6G                                                                                  |          |  |
| LH                                                                                |                                                                                   |                                                                                   |                                                                                   | LH                                                                                | LH                                                                                | LH                                                                                  |          |  |
| G-GUT-LD<br>LH                                                                    | G-AUS-LD                                                                          | G-AUS-LD                                                                          | G-AUS-LD                                                                          | G-AUS-LD<br>LH                                                                    | G-AUS-LD<br>LH                                                                    | G-AUS-LD<br>LH                                                                      |          |  |
| L0120170.0646                                                                     | L0140100.0646                                                                     | L0140110.0646                                                                     | L0140120.0646                                                                     | L0140150.0646                                                                     | L0140160.0646                                                                     | L0140170.0646                                                                       | M 52 x 3 |  |
| L0120170.0653                                                                     | L0140100.0653                                                                     | L0140110.0653                                                                     | L0140120.0653                                                                     | L0140150.0653                                                                     | L0140160.0653                                                                     | L0140170.0653                                                                       | 55 x 1   |  |
| L0120170.0654                                                                     | L0140100.0654                                                                     | L0140110.0654                                                                     | L0140120.0654                                                                     | L0140150.0654                                                                     | L0140160.0654                                                                     | L0140170.0654                                                                       | 55 x 1,5 |  |
| L0120170.0655                                                                     | L0140100.0655                                                                     | L0140110.0655                                                                     | L0140120.0655                                                                     | L0140150.0655                                                                     | L0140160.0655                                                                     | L0140170.0655                                                                       | 55 x 2   |  |
| L0120170.0656                                                                     | L0140100.0656                                                                     | L0140110.0656                                                                     | L0140120.0656                                                                     | L0140150.0656                                                                     | L0140160.0656                                                                     | L0140170.0656                                                                       | 55 x 3   |  |
| L0120170.0658                                                                     | L0140100.0658                                                                     | L0140110.0658                                                                     | L0140120.0658                                                                     | L0140150.0658                                                                     | L0140160.0658                                                                     | L0140170.0658                                                                       | 56 x 1   |  |
| L0120170.0659                                                                     | L0140100.0659                                                                     | L0140110.0659                                                                     | L0140120.0659                                                                     | L0140150.0659                                                                     | L0140160.0659                                                                     | L0140170.0659                                                                       | 56 x 1,5 |  |
| L0120170.0660                                                                     | L0140100.0660                                                                     | L0140110.0660                                                                     | L0140120.0660                                                                     | L0140150.0660                                                                     | L0140160.0660                                                                     | L0140170.0660                                                                       | 56 x 2   |  |
| L0120170.0661                                                                     | L0140100.0661                                                                     | L0140110.0661                                                                     | L0140120.0661                                                                     | L0140150.0661                                                                     | L0140160.0661                                                                     | L0140170.0661                                                                       | 56 x 3   |  |
| L0120170.0663                                                                     | L0140100.0663                                                                     | L0140110.0663                                                                     | L0140120.0663                                                                     | L0140150.0663                                                                     | L0140160.0663                                                                     | L0140170.0663                                                                       | 58 x 1   |  |
| L0120170.0664                                                                     | L0140100.0664                                                                     | L0140110.0664                                                                     | L0140120.0664                                                                     | L0140150.0664                                                                     | L0140160.0664                                                                     | L0140170.0664                                                                       | 58 x 1,5 |  |
| L0120170.0665                                                                     | L0140100.0665                                                                     | L0140110.0665                                                                     | L0140120.0665                                                                     | L0140150.0665                                                                     | L0140160.0665                                                                     | L0140170.0665                                                                       | 58 x 2   |  |
| L0120170.0666                                                                     | L0140100.0666                                                                     | L0140110.0666                                                                     | L0140120.0666                                                                     | L0140150.0666                                                                     | L0140160.0666                                                                     | L0140170.0666                                                                       | 58 x 3   |  |
| L0120170.0668                                                                     | L0140100.0668                                                                     | L0140110.0668                                                                     | L0140120.0668                                                                     | L0140150.0668                                                                     | L0140160.0668                                                                     | L0140170.0668                                                                       | 60 x 1   |  |
| L0120170.0669                                                                     | L0140100.0669                                                                     | L0140110.0669                                                                     | L0140120.0669                                                                     | L0140150.0669                                                                     | L0140160.0669                                                                     | L0140170.0669                                                                       | 60 x 1,5 |  |
| L0120170.0670                                                                     | L0140100.0670                                                                     | L0140110.0670                                                                     | L0140120.0670                                                                     | L0140150.0670                                                                     | L0140160.0670                                                                     | L0140170.0670                                                                       | 60 x 2   |  |
| L0120170.0671                                                                     | L0140100.0671                                                                     | L0140110.0671                                                                     | L0140120.0671                                                                     | L0140150.0671                                                                     | L0140160.0671                                                                     | L0140170.0671                                                                       | 60 x 3   |  |
| L0120170.0673                                                                     | L0140100.0673                                                                     | L0140110.0673                                                                     | L0140120.0673                                                                     | L0140150.0673                                                                     | L0140160.0673                                                                     | L0140170.0673                                                                       | 62 x 1   |  |
| L0120170.0674                                                                     | L0140100.0674                                                                     | L0140110.0674                                                                     | L0140120.0674                                                                     | L0140150.0674                                                                     | L0140160.0674                                                                     | L0140170.0674                                                                       | 62 x 1,5 |  |
| L0120170.0675                                                                     | L0140100.0675                                                                     | L0140110.0675                                                                     | L0140120.0675                                                                     | L0140150.0675                                                                     | L0140160.0675                                                                     | L0140170.0675                                                                       | 62 x 2   |  |
| L0120170.0676                                                                     | L0140100.0676                                                                     | L0140110.0676                                                                     | L0140120.0676                                                                     | L0140150.0676                                                                     | L0140160.0676                                                                     | L0140170.0676                                                                       | 62 x 3   |  |
| L0120170.0678                                                                     | L0140100.0678                                                                     | L0140110.0678                                                                     | L0140120.0678                                                                     | L0140150.0678                                                                     | L0140160.0678                                                                     | L0140170.0678                                                                       | 64 x 1   |  |
| L0120170.0679                                                                     | L0140100.0679                                                                     | L0140110.0679                                                                     | L0140120.0679                                                                     | L0140150.0679                                                                     | L0140160.0679                                                                     | L0140170.0679                                                                       | 64 x 1,5 |  |
| L0120170.0680                                                                     | L0140100.0680                                                                     | L0140110.0680                                                                     | L0140120.0680                                                                     | L0140150.0680                                                                     | L0140160.0680                                                                     | L0140170.0680                                                                       | 64 x 2   |  |
| L0120170.0681                                                                     | L0140100.0681                                                                     | L0140110.0681                                                                     | L0140120.0681                                                                     | L0140150.0681                                                                     | L0140160.0681                                                                     | L0140170.0681                                                                       | 64 x 3   |  |
| L0120170.0683                                                                     | L0140100.0683                                                                     | L0140110.0683                                                                     | L0140120.0683                                                                     | L0140150.0683                                                                     | L0140160.0683                                                                     | L0140170.0683                                                                       | 65 x 1   |  |
| L0120170.0684                                                                     | L0140100.0684                                                                     | L0140110.0684                                                                     | L0140120.0684                                                                     | L0140150.0684                                                                     | L0140160.0684                                                                     | L0140170.0684                                                                       | 65 x 1,5 |  |
| L0120170.0685                                                                     | L0140100.0685                                                                     | L0140110.0685                                                                     | L0140120.0685                                                                     | L0140150.0685                                                                     | L0140160.0685                                                                     | L0140170.0685                                                                       | 65 x 2   |  |
| L0120170.0686                                                                     | L0140100.0686                                                                     | L0140110.0686                                                                     | L0140120.0686                                                                     | L0140150.0686                                                                     | L0140160.0686                                                                     | L0140170.0686                                                                       | 65 x 3   |  |
| L0120170.0688                                                                     | L0140100.0688                                                                     | L0140110.0688                                                                     | L0140120.0688                                                                     | L0140150.0688                                                                     | L0140160.0688                                                                     | L0140170.0688                                                                       | 68 x 1   |  |
| L0120170.0689                                                                     | L0140100.0689                                                                     | L0140110.0689                                                                     | L0140120.0689                                                                     | L0140150.0689                                                                     | L0140160.0689                                                                     | L0140170.0689                                                                       | 68 x 1,5 |  |
| L0120170.0690                                                                     | L0140100.0690                                                                     | L0140110.0690                                                                     | L0140120.0690                                                                     | L0140150.0690                                                                     | L0140160.0690                                                                     | L0140170.0690                                                                       | 68 x 2   |  |
| L0120170.0691                                                                     | L0140100.0691                                                                     | L0140110.0691                                                                     | L0140120.0691                                                                     | L0140150.0691                                                                     | L0140160.0691                                                                     | L0140170.0691                                                                       | 68 x 3   |  |
| L0120170.0693                                                                     | L0140100.0693                                                                     | L0140110.0693                                                                     | L0140120.0693                                                                     | L0140150.0693                                                                     | L0140160.0693                                                                     | L0140170.0693                                                                       | 70 x 1   |  |
| L0120170.0694                                                                     | L0140100.0694                                                                     | L0140110.0694                                                                     | L0140120.0694                                                                     | L0140150.0694                                                                     | L0140160.0694                                                                     | L0140170.0694                                                                       | 70 x 1,5 |  |
| L0120170.0695                                                                     | L0140100.0695                                                                     | L0140110.0695                                                                     | L0140120.0695                                                                     | L0140150.0695                                                                     | L0140160.0695                                                                     | L0140170.0695                                                                       | 70 x 2   |  |
| L0120170.0696                                                                     | L0140100.0696                                                                     | L0140110.0696                                                                     | L0140120.0696                                                                     | L0140150.0696                                                                     | L0140160.0696                                                                     | L0140170.0696                                                                       | 70 x 3   |  |
| L0120170.0699                                                                     | L0140100.0699                                                                     | L0140110.0699                                                                     | L0140120.0699                                                                     | L0140150.0699                                                                     | L0140160.0699                                                                     | L0140170.0699                                                                       | 72 x 1   |  |
| L0120170.0700                                                                     | L0140100.0700                                                                     | L0140110.0700                                                                     | L0140120.0700                                                                     | L0140150.0700                                                                     | L0140160.0700                                                                     | L0140170.0700                                                                       | 72 x 1,5 |  |
| L0120170.0701                                                                     | L0140100.0701                                                                     | L0140110.0701                                                                     | L0140120.0701                                                                     | L0140150.0701                                                                     | L0140160.0701                                                                     | L0140170.0701                                                                       | 72 x 2   |  |
| L0120170.0702                                                                     | L0140100.0702                                                                     | L0140110.0702                                                                     | L0140120.0702                                                                     | L0140150.0702                                                                     | L0140160.0702                                                                     | L0140170.0702                                                                       | 72 x 3   |  |
| L0120170.0705                                                                     | L0140100.0705                                                                     | L0140110.0705                                                                     | L0140120.0705                                                                     | L0140150.0705                                                                     | L0140160.0705                                                                     | L0140170.0705                                                                       | 75 x 1   |  |
| L0120170.0706                                                                     | L0140100.0706                                                                     | L0140110.0706                                                                     | L0140120.0706                                                                     | L0140150.0706                                                                     | L0140160.0706                                                                     | L0140170.0706                                                                       | 75 x 1,5 |  |
| L0120170.0707                                                                     | L0140100.0707                                                                     | L0140110.0707                                                                     | L0140120.0707                                                                     | L0140150.0707                                                                     | L0140160.0707                                                                     | L0140170.0707                                                                       | 75 x 2   |  |
| L0120170.0708                                                                     | L0140100.0708                                                                     | L0140110.0708                                                                     | L0140120.0708                                                                     | L0140150.0708                                                                     | L0140160.0708                                                                     | L0140170.0708                                                                       | 75 x 3   |  |
| L0120170.0711                                                                     | L0140100.0711                                                                     | L0140110.0711                                                                     | L0140120.0711                                                                     | L0140150.0711                                                                     | L0140160.0711                                                                     | L0140170.0711                                                                       | 76 x 1   |  |
| L0120170.0712                                                                     | L0140100.0712                                                                     | L0140110.0712                                                                     | L0140120.0712                                                                     | L0140150.0712                                                                     | L0140160.0712                                                                     | L0140170.0712                                                                       | 76 x 1,5 |  |
| L0120170.0713                                                                     | L0140100.0713                                                                     | L0140110.0713                                                                     | L0140120.0713                                                                     | L0140150.0713                                                                     | L0140160.0713                                                                     | L0140170.0713                                                                       | 76 x 2   |  |
| L0120170.0714                                                                     | L0140100.0714                                                                     | L0140110.0714                                                                     | L0140120.0714                                                                     | L0140150.0714                                                                     | L0140160.0714                                                                     | L0140170.0714                                                                       | 76 x 3   |  |
| L0120170.0717                                                                     | L0140100.0717                                                                     | L0140110.0717                                                                     | L0140120.0717                                                                     | L0140150.0717                                                                     | L0140160.0717                                                                     | L0140170.0717                                                                       | 78 x 1   |  |
| L0120170.0718                                                                     | L0140100.0718                                                                     | L0140110.0718                                                                     | L0140120.0718                                                                     | L0140150.0718                                                                     | L0140160.0718                                                                     | L0140170.0718                                                                       | 78 x 1,5 |  |
| L0120170.0719                                                                     | L0140100.0719                                                                     | L0140110.0719                                                                     | L0140120.0719                                                                     | L0140150.0719                                                                     | L0140160.0719                                                                     | L0140170.0719                                                                       | 78 x 2   |  |
| L0120170.0723                                                                     | L0140100.0723                                                                     | L0140110.0723                                                                     | L0140120.0723                                                                     | L0140150.0723                                                                     | L0140160.0723                                                                     | L0140170.0723                                                                       | 80 x 1   |  |
| L0120170.0724                                                                     | L0140100.0724                                                                     | L0140110.0724                                                                     | L0140120.0724                                                                     | L0140150.0724                                                                     | L0140160.0724                                                                     | L0140170.0724                                                                       | 80 x 1,5 |  |
| L0120170.0725                                                                     | L0140100.0725                                                                     | L0140110.0725                                                                     | L0140120.0725                                                                     | L0140150.0725                                                                     | L0140160.0725                                                                     | L0140170.0725                                                                       | 80 x 2   |  |
| L0120170.0726                                                                     | L0140100.0726                                                                     | L0140110.0726                                                                     | L0140120.0726                                                                     | L0140150.0726                                                                     | L0140160.0726                                                                     | L0140170.0726                                                                       | 80 x 3   |  |
| L0120170.0729                                                                     | L0140100.0729                                                                     | L0140110.0729                                                                     | L0140120.0729                                                                     | L0140150.0729                                                                     | L0140160.0729                                                                     | L0140170.0729                                                                       | 82 x 1,5 |  |



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# MF

DIN 13



Lehrenmaße nach DIN ISO 1502  
Gauge dimensions acc. DIN ISO 1502

Toleranz · Tolerance  
Beschichtung · Coating

6H

6H

TIN

4H

6G

6H

4H

LH

LH

G-GUT-LD

G-GUT-LD

TIN

G-GUT-LD

G-GUT-LD

G-GUT-LD

LH

G-GUT-LD

LH

|     | ø d <sub>1</sub><br>mm |   | P<br>mm |               | α-G01-LD      | α-G01-LD<br>TIN | α-G01-LD      | α-G01-LD      | α-G01-LD      | α-G01-LD<br>LH | α-G01-LD<br>LH |
|-----|------------------------|---|---------|---------------|---------------|-----------------|---------------|---------------|---------------|----------------|----------------|
| M   | 82                     | x | 2       |               | L0120100.0730 |                 | L0120110.0730 | L0120120.0730 |               | L0120150.0730  | L0120160.0730  |
|     | 85                     | x | 1,5     |               | L0120100.0734 |                 | L0120110.0734 | L0120120.0734 |               | L0120150.0734  | L0120160.0734  |
|     | 85                     | x | 2       |               | L0120100.0735 |                 | L0120110.0735 | L0120120.0735 |               | L0120150.0735  | L0120160.0735  |
|     | 85                     | x | 3       |               | L0120100.0736 |                 | L0120110.0736 | L0120120.0736 |               | L0120150.0736  | L0120160.0736  |
|     | 88                     | x | 1,5     |               | L0120100.0739 |                 | L0120110.0739 | L0120120.0739 |               | L0120150.0739  | L0120160.0739  |
|     | 88                     | x | 2       |               | L0120100.0740 |                 | L0120110.0740 | L0120120.0740 |               | L0120150.0740  | L0120160.0740  |
|     | 90                     | x | 1,5     |               | L0120100.0744 |                 | L0120110.0744 | L0120120.0744 |               | L0120150.0744  | L0120160.0744  |
|     | 90                     | x | 2       |               | L0120100.0745 |                 | L0120110.0745 | L0120120.0745 |               | L0120150.0745  | L0120160.0745  |
|     | 90                     | x | 3       |               | L0120100.0746 |                 | L0120110.0746 | L0120120.0746 |               | L0120150.0746  | L0120160.0746  |
|     | 92                     | x | 1,5     |               | L0120100.0749 |                 | L0120110.0749 | L0120120.0749 |               | L0120150.0749  | L0120160.0749  |
|     | 92                     | x | 2       |               | L0120100.0750 |                 | L0120110.0750 | L0120120.0750 |               | L0120150.0750  | L0120160.0750  |
|     | 95                     | x | 1,5     |               | L0120100.0754 |                 | L0120110.0754 | L0120120.0754 |               | L0120150.0754  | L0120160.0754  |
|     | 95                     | x | 2       |               | L0120100.0755 |                 | L0120110.0755 | L0120120.0755 |               | L0120150.0755  | L0120160.0755  |
|     | 95                     | x | 3       |               | L0120100.0756 |                 | L0120110.0756 | L0120120.0756 |               | L0120150.0756  | L0120160.0756  |
|     | 98                     | x | 1,5     |               | L0120100.0759 |                 | L0120110.0759 | L0120120.0759 |               | L0120150.0759  | L0120160.0759  |
|     | 98                     | x | 2       |               | L0120100.0760 |                 | L0120110.0760 | L0120120.0760 |               | L0120150.0760  | L0120160.0760  |
|     | 100                    | x | 1,5     |               | L0120100.0764 |                 | L0120110.0764 | L0120120.0764 |               | L0120150.0764  | L0120160.0764  |
|     | 100                    | x | 2       |               | L0120100.0765 |                 | L0120110.0765 | L0120120.0765 |               | L0120150.0765  | L0120160.0765  |
| 100 | x                      | 3 |         | L0120100.0766 |               | L0120110.0766   | L0120120.0766 |               | L0120150.0766 | L0120160.0766  |                |

← M2 x 0,25 - M82 x 1,5



|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |   |           |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---|-----------|
|  |  |  |  |  |  |  |   |           |
|  |  |  |  |  |  |  |   |           |
| 6G                                                                                | 6H                                                                                | 4H                                                                                | 6G                                                                                | 6H                                                                                | 4H                                                                                | 6G                                                                                  |   |           |
| LH                                                                                |                                                                                   |                                                                                   |                                                                                   | LH                                                                                | LH                                                                                | LH                                                                                  |   |           |
| G-GUT-LD<br>LH                                                                    | G-AUS-LD                                                                          | G-AUS-LD                                                                          | G-AUS-LD                                                                          | G-AUS-LD<br>LH                                                                    | G-AUS-LD<br>LH                                                                    | G-AUS-LD<br>LH                                                                      |   |           |
| L0120170.0730                                                                     | L0140100.0730                                                                     | L0140110.0730                                                                     | L0140120.0730                                                                     | L0140150.0730                                                                     | L0140160.0730                                                                     | L0140170.0730                                                                       | M | 82 x 2    |
| L0120170.0734                                                                     | L0140100.0734                                                                     | L0140110.0734                                                                     | L0140120.0734                                                                     | L0140150.0734                                                                     | L0140160.0734                                                                     | L0140170.0734                                                                       |   | 85 x 1,5  |
| L0120170.0735                                                                     | L0140100.0735                                                                     | L0140110.0735                                                                     | L0140120.0735                                                                     | L0140150.0735                                                                     | L0140160.0735                                                                     | L0140170.0735                                                                       |   | 85 x 2    |
| L0120170.0736                                                                     | L0140100.0736                                                                     | L0140110.0736                                                                     | L0140120.0736                                                                     | L0140150.0736                                                                     | L0140160.0736                                                                     | L0140170.0736                                                                       |   | 85 x 3    |
| L0120170.0739                                                                     | L0140100.0739                                                                     | L0140110.0739                                                                     | L0140120.0739                                                                     | L0140150.0739                                                                     | L0140160.0739                                                                     | L0140170.0739                                                                       |   | 88 x 1,5  |
| L0120170.0740                                                                     | L0140100.0740                                                                     | L0140110.0740                                                                     | L0140120.0740                                                                     | L0140150.0740                                                                     | L0140160.0740                                                                     | L0140170.0740                                                                       |   | 88 x 2    |
| L0120170.0744                                                                     | L0140100.0744                                                                     | L0140110.0744                                                                     | L0140120.0744                                                                     | L0140150.0744                                                                     | L0140160.0744                                                                     | L0140170.0744                                                                       |   | 90 x 1,5  |
| L0120170.0745                                                                     | L0140100.0745                                                                     | L0140110.0745                                                                     | L0140120.0745                                                                     | L0140150.0745                                                                     | L0140160.0745                                                                     | L0140170.0745                                                                       |   | 90 x 2    |
| L0120170.0746                                                                     | L0140100.0746                                                                     | L0140110.0746                                                                     | L0140120.0746                                                                     | L0140150.0746                                                                     | L0140160.0746                                                                     | L0140170.0746                                                                       |   | 90 x 3    |
| L0120170.0749                                                                     | L0140100.0749                                                                     | L0140110.0749                                                                     | L0140120.0749                                                                     | L0140150.0749                                                                     | L0140160.0749                                                                     | L0140170.0749                                                                       |   | 92 x 1,5  |
| L0120170.0750                                                                     | L0140100.0750                                                                     | L0140110.0750                                                                     | L0140120.0750                                                                     | L0140150.0750                                                                     | L0140160.0750                                                                     | L0140170.0750                                                                       |   | 92 x 2    |
| L0120170.0754                                                                     | L0140100.0754                                                                     | L0140110.0754                                                                     | L0140120.0754                                                                     | L0140150.0754                                                                     | L0140160.0754                                                                     | L0140170.0754                                                                       |   | 95 x 1,5  |
| L0120170.0755                                                                     | L0140100.0755                                                                     | L0140110.0755                                                                     | L0140120.0755                                                                     | L0140150.0755                                                                     | L0140160.0755                                                                     | L0140170.0755                                                                       |   | 95 x 2    |
| L0120170.0756                                                                     | L0140100.0756                                                                     | L0140110.0756                                                                     | L0140120.0756                                                                     | L0140150.0756                                                                     | L0140160.0756                                                                     | L0140170.0756                                                                       |   | 95 x 3    |
| L0120170.0759                                                                     | L0140100.0759                                                                     | L0140110.0759                                                                     | L0140120.0759                                                                     | L0140150.0759                                                                     | L0140160.0759                                                                     | L0140170.0759                                                                       |   | 98 x 1,5  |
| L0120170.0760                                                                     | L0140100.0760                                                                     | L0140110.0760                                                                     | L0140120.0760                                                                     | L0140150.0760                                                                     | L0140160.0760                                                                     | L0140170.0760                                                                       |   | 98 x 2    |
| L0120170.0764                                                                     | L0140100.0764                                                                     | L0140110.0764                                                                     | L0140120.0764                                                                     | L0140150.0764                                                                     | L0140160.0764                                                                     | L0140170.0764                                                                       |   | 100 x 1,5 |
| L0120170.0765                                                                     | L0140100.0765                                                                     | L0140110.0765                                                                     | L0140120.0765                                                                     | L0140150.0765                                                                     | L0140160.0765                                                                     | L0140170.0765                                                                       |   | 100 x 2   |
| L0120170.0766                                                                     | L0140100.0766                                                                     | L0140110.0766                                                                     | L0140120.0766                                                                     | L0140150.0766                                                                     | L0140160.0766                                                                     | L0140170.0766                                                                       |   | 100 x 3   |

Product  
Finder

M

MF

UNC

UNF

Rp, R, Rc

NPT, NPTF

BSW

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Glatt

Smooth

GT, TD

Zubehör

Accessories

PoCoSys

Kalibrieren

Calibration



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# MF

DIN 13



Lehrenmaße nach DIN ISO 1502  
Gauge dimensions acc. DIN ISO 1502

Toleranz · Tolerance  
Beschichtung · Coating

6g

4h

6h

6e

6g <sup>1)</sup>

4h

G-GUT-LR

G-GUT-LR

G-GUT-LR

G-GUT-LR

LH  
G-GUT-LR  
LH

LH  
G-GUT-LR  
LH

| ø d <sub>1</sub><br>mm | P<br>mm |   |      |               |               |               |               |
|------------------------|---------|---|------|---------------|---------------|---------------|---------------|
| <b>M</b>               | 2       | x | 0,25 |               |               |               |               |
|                        | 2,2     | x | 0,25 |               | L0200510.0186 |               |               |
|                        | 2,3     | x | 0,25 |               | L0200510.0189 |               |               |
|                        |         |   |      |               | L0200510.0192 |               |               |
|                        | 2,5     | x | 0,35 | L0200500.0196 |               |               |               |
|                        | 2,6     | x | 0,35 | L0200500.0199 |               |               |               |
|                        | 3       | x | 0,35 | L0200500.0202 |               |               |               |
|                        | 3,5     | x | 0,35 | L0200500.0205 |               |               | L0200550.0202 |
|                        | 4       | x | 0,35 | L0200500.0209 |               |               | L0200550.0205 |
|                        | 4       | x | 0,5  | L0200500.0210 | L0200510.0210 |               | L0200550.0209 |
|                        | 4,5     | x | 0,5  | L0200500.0214 |               | L0200530.0210 | L0200550.0210 |
|                        | 5       | x | 0,5  | L0200500.0218 |               |               |               |
|                        | 6       | x | 0,5  | L0200500.0228 | L0200510.0218 | L0200530.0218 | L0200550.0218 |
|                        | 6       | x | 0,75 | L0200500.0229 | L0200510.0228 | L0200530.0228 | L0200550.0228 |
|                        | 7       | x | 0,75 | L0200500.0239 | L0200510.0229 | L0200530.0229 | L0200550.0229 |
|                        | 8       | x | 0,5  | L0200500.0249 |               |               |               |
|                        | 8       | x | 0,75 | L0200500.0250 | L0200510.0250 |               |               |
|                        | 8       | x | 1    | L0200500.0251 |               | L0200530.0250 | L0200550.0250 |
|                        | 9       | x | 1    | L0200500.0263 | L0200510.0251 | L0200530.0251 | L0200550.0251 |
|                        | 10      | x | 0,75 | L0200500.0275 | L0200510.0263 | L0200530.0263 | L0200550.0263 |
|                        | 10      | x | 1    | L0200500.0276 |               |               |               |
|                        | 10      | x | 1,25 | L0200500.0277 | L0200510.0276 | L0200530.0276 | L0200550.0276 |
|                        | 11      | x | 1    | L0200500.0288 |               |               |               |
|                        | 12      | x | 1    | L0200500.0301 | L0200510.0288 | L0200530.0288 | L0200550.0288 |
|                        | 12      | x | 1,25 | L0200500.0302 | L0200510.0301 | L0200530.0301 | L0200550.0301 |
|                        | 12      | x | 1,5  | L0200500.0303 |               |               |               |
|                        | 13      | x | 1    | L0200500.0315 | L0200510.0303 | L0200530.0303 | L0200550.0303 |
|                        | 13      | x | 1,5  | L0200500.0317 | L0200510.0315 | L0200530.0315 | L0200550.0315 |
|                        | 14      | x | 1    | L0200500.0329 | L0200510.0317 | L0200530.0317 | L0200550.0317 |
|                        | 14      | x | 1,25 | L0200500.0330 | L0200510.0329 | L0200530.0329 | L0200550.0329 |
|                        | 14      | x | 1,5  | L0200500.0331 |               |               |               |
|                        | 15      | x | 1    | L0200500.0343 | L0200510.0331 | L0200530.0331 | L0200550.0331 |
|                        | 15      | x | 1,5  | L0200500.0345 | L0200510.0343 | L0200530.0343 | L0200550.0343 |
|                        | 16      | x | 1    | L0200500.0357 | L0200510.0345 | L0200530.0345 | L0200550.0345 |
|                        | 16      | x | 1,5  | L0200500.0359 | L0200510.0357 | L0200530.0357 | L0200550.0357 |
|                        | 17      | x | 1    | L0200500.0372 | L0200510.0359 | L0200530.0359 | L0200550.0359 |
|                        | 17      | x | 1,5  | L0200500.0374 | L0200510.0372 | L0200530.0372 | L0200550.0372 |
|                        | 18      | x | 1    | L0200500.0388 | L0200510.0374 | L0200530.0374 | L0200550.0374 |
|                        | 18      | x | 1,5  | L0200500.0390 | L0200510.0388 | L0200530.0388 | L0200550.0388 |
|                        | 18      | x | 2    | L0200500.0391 | L0200510.0390 | L0200530.0390 | L0200550.0390 |
|                        | 19      | x | 1    | L0200500.0404 | L0200510.0391 | L0200530.0391 | L0200550.0391 |
|                        | 20      | x | 1    | L0200500.0420 | L0200510.0404 | L0200530.0404 | L0200550.0404 |
|                        | 20      | x | 1,5  | L0200500.0422 | L0200510.0420 | L0200530.0420 | L0200550.0420 |
|                        | 20      | x | 2    | L0200500.0423 | L0200510.0422 | L0200530.0422 | L0200550.0422 |
|                        | 21      | x | 1    | L0200500.0428 | L0200510.0423 | L0200530.0423 | L0200550.0423 |
|                        | 22      | x | 1    | L0200500.0436 | L0200510.0428 | L0200530.0428 | L0200550.0428 |
|                        | 22      | x | 1,5  | L0200500.0438 | L0200510.0436 | L0200530.0436 | L0200550.0436 |
|                        | 22      | x | 2    | L0200500.0439 | L0200510.0438 | L0200530.0438 | L0200550.0438 |
|                        | 23      | x | 1    | L0200500.0443 | L0200510.0439 | L0200530.0439 | L0200550.0439 |
|                        | 24      | x | 1    | L0200500.0450 | L0200510.0443 | L0200530.0443 | L0200550.0443 |
|                        | 24      | x | 1,5  | L0200500.0452 | L0200510.0450 | L0200530.0450 | L0200550.0450 |
|                        | 24      | x | 2    | L0200500.0453 | L0200510.0452 | L0200530.0452 | L0200550.0452 |
|                        | 25      | x | 1    | L0200500.0456 | L0200510.0453 | L0200530.0453 | L0200550.0453 |
|                        | 25      | x | 1,5  | L0200500.0458 | L0200510.0456 | L0200530.0456 | L0200550.0456 |
|                        | 25      | x | 2    | L0200500.0459 | L0200510.0458 | L0200530.0458 | L0200550.0458 |
|                        | 26      | x | 1    | L0200500.0462 | L0200510.0459 | L0200530.0459 | L0200550.0459 |
|                        | 26      | x | 1,5  | L0200500.0464 | L0200510.0462 | L0200530.0462 | L0200550.0462 |
|                        | 26      | x | 2    | L0200500.0465 | L0200510.0464 | L0200530.0464 | L0200550.0464 |
|                        |         |   |      |               | L0200501.0465 | L0200530.0465 | L0200550.0465 |

<sup>1)</sup> Toleranz „6h“ auf Anfrage  
Tolerance „6h“ upon request



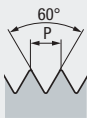
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|  |  |  |  |  |   |  |  |            |
|   |  |  |  |  |  |  |  |            |
| 6e                                                                                | 6g                                                                                | 4h                                                                                | 6h                                                                                | 6e                                                                                | 6g 1)                                                                              | 4h                                                                                  | 6e                                                                                  |            |
| LH                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | LH                                                                                 | LH                                                                                  | LH                                                                                  |            |
| G-GUT-LR<br>LH                                                                    | G-AUS-LR                                                                          | G-AUS-LR                                                                          | G-AUS-LR                                                                          | G-AUS-LR                                                                          | G-AUS-LR<br>LH                                                                     | G-AUS-LR<br>LH                                                                      | G-AUS-LR<br>LH                                                                      |            |
|                                                                                   |                                                                                   | L0300510.0186<br>L0300510.0189<br>L0300510.0192                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | M 2 x 0,25 |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 2,2 x 0,25 |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 2,3 x 0,25 |
|                                                                                   | L0300500.0196                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 2,5 x 0,35 |
|                                                                                   | L0300500.0199                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 2,6 x 0,35 |
|                                                                                   | L0300500.0202                                                                     |                                                                                   |                                                                                   |                                                                                   | L0300550.0202                                                                      |                                                                                     |                                                                                     | 3 x 0,35   |
|                                                                                   | L0300500.0205                                                                     |                                                                                   |                                                                                   |                                                                                   | L0300550.0205                                                                      |                                                                                     |                                                                                     | 3,5 x 0,35 |
|                                                                                   | L0300500.0209                                                                     |                                                                                   |                                                                                   |                                                                                   | L0300550.0209                                                                      |                                                                                     |                                                                                     | 4 x 0,35   |
|                                                                                   | L0300500.0210                                                                     | L0300510.0210                                                                     |                                                                                   | L0300530.0210                                                                     | L0300550.0210                                                                      |                                                                                     |                                                                                     | 4 x 0,5    |
|                                                                                   | L0300500.0214                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 4,5 x 0,5  |
|                                                                                   | L0300500.0218                                                                     | L0300510.0218                                                                     |                                                                                   | L0300530.0218                                                                     | L0300550.0218                                                                      |                                                                                     |                                                                                     | 5 x 0,5    |
|                                                                                   | L0300500.0228                                                                     | L0300510.0228                                                                     |                                                                                   | L0300530.0228                                                                     | L0300550.0228                                                                      |                                                                                     |                                                                                     | 6 x 0,5    |
|                                                                                   | L0300500.0229                                                                     | L0300510.0229                                                                     |                                                                                   | L0300530.0229                                                                     | L0300550.0229                                                                      |                                                                                     |                                                                                     | 6 x 0,75   |
|                                                                                   | L0300500.0239                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 7 x 0,75   |
|                                                                                   | L0300500.0249                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 8 x 0,5    |
|                                                                                   | L0300500.0250                                                                     | L0300510.0250                                                                     |                                                                                   | L0300530.0250                                                                     | L0300550.0250                                                                      |                                                                                     |                                                                                     | 8 x 0,75   |
| L0200580.0251                                                                     | L0300500.0251                                                                     | L0300510.0251                                                                     | L0300501.0251                                                                     | L0300530.0251                                                                     | L0300550.0251                                                                      | L0300560.0251                                                                       | L0300580.0251                                                                       | 8 x 1      |
| L0200580.0263                                                                     | L0300500.0263                                                                     | L0300510.0263                                                                     | L0300501.0263                                                                     | L0300530.0263                                                                     | L0300550.0263                                                                      | L0300560.0263                                                                       | L0300580.0263                                                                       | 9 x 1      |
|                                                                                   | L0300500.0275                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 10 x 0,75  |
| L0200580.0276                                                                     | L0300500.0276                                                                     | L0300510.0276                                                                     | L0300501.0276                                                                     | L0300530.0276                                                                     | L0300550.0276                                                                      | L0300560.0276                                                                       | L0300580.0276                                                                       | 10 x 1     |
|                                                                                   | L0300500.0277                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 10 x 1,25  |
| L0200580.0288                                                                     | L0300500.0288                                                                     | L0300510.0288                                                                     | L0300501.0288                                                                     | L0300530.0288                                                                     | L0300550.0288                                                                      | L0300560.0288                                                                       | L0300580.0288                                                                       | 11 x 1     |
| L0200580.0301                                                                     | L0300500.0301                                                                     | L0300510.0301                                                                     | L0300501.0301                                                                     | L0300530.0301                                                                     | L0300550.0301                                                                      | L0300560.0301                                                                       | L0300580.0301                                                                       | 12 x 1     |
|                                                                                   | L0300500.0302                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 12 x 1,25  |
| L0200580.0303                                                                     | L0300500.0303                                                                     | L0300510.0303                                                                     | L0300501.0303                                                                     | L0300530.0303                                                                     | L0300550.0303                                                                      | L0300560.0303                                                                       | L0300580.0303                                                                       | 12 x 1,5   |
| L0200580.0315                                                                     | L0300500.0315                                                                     | L0300510.0315                                                                     | L0300501.0315                                                                     | L0300530.0315                                                                     | L0300550.0315                                                                      | L0300560.0315                                                                       | L0300580.0315                                                                       | 13 x 1     |
| L0200580.0317                                                                     | L0300500.0317                                                                     | L0300510.0317                                                                     | L0300501.0317                                                                     | L0300530.0317                                                                     | L0300550.0317                                                                      | L0300560.0317                                                                       | L0300580.0317                                                                       | 13 x 1,5   |
| L0200580.0329                                                                     | L0300500.0329                                                                     | L0300510.0329                                                                     | L0300501.0329                                                                     | L0300530.0329                                                                     | L0300550.0329                                                                      | L0300560.0329                                                                       | L0300580.0329                                                                       | 14 x 1     |
|                                                                                   | L0300500.0330                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 14 x 1,25  |
| L0200580.0331                                                                     | L0300500.0331                                                                     | L0300510.0331                                                                     | L0300501.0331                                                                     | L0300530.0331                                                                     | L0300550.0331                                                                      | L0300560.0331                                                                       | L0300580.0331                                                                       | 14 x 1,5   |
| L0200580.0343                                                                     | L0300500.0343                                                                     | L0300510.0343                                                                     | L0300501.0343                                                                     | L0300530.0343                                                                     | L0300550.0343                                                                      | L0300560.0343                                                                       | L0300580.0343                                                                       | 15 x 1     |
| L0200580.0345                                                                     | L0300500.0345                                                                     | L0300510.0345                                                                     | L0300501.0345                                                                     | L0300530.0345                                                                     | L0300550.0345                                                                      | L0300560.0345                                                                       | L0300580.0345                                                                       | 15 x 1,5   |
| L0200580.0357                                                                     | L0300500.0357                                                                     | L0300510.0357                                                                     | L0300501.0357                                                                     | L0300530.0357                                                                     | L0300550.0357                                                                      | L0300560.0357                                                                       | L0300580.0357                                                                       | 16 x 1     |
| L0200580.0359                                                                     | L0300500.0359                                                                     | L0300510.0359                                                                     | L0300501.0359                                                                     | L0300530.0359                                                                     | L0300550.0359                                                                      | L0300560.0359                                                                       | L0300580.0359                                                                       | 16 x 1,5   |
| L0200580.0372                                                                     | L0300500.0372                                                                     | L0300510.0372                                                                     | L0300501.0372                                                                     | L0300530.0372                                                                     | L0300550.0372                                                                      | L0300560.0372                                                                       | L0300580.0372                                                                       | 17 x 1     |
| L0200580.0374                                                                     | L0300500.0374                                                                     | L0300510.0374                                                                     | L0300501.0374                                                                     | L0300530.0374                                                                     | L0300550.0374                                                                      | L0300560.0374                                                                       | L0300580.0374                                                                       | 17 x 1,5   |
| L0200580.0388                                                                     | L0300500.0388                                                                     | L0300510.0388                                                                     | L0300501.0388                                                                     | L0300530.0388                                                                     | L0300550.0388                                                                      | L0300560.0388                                                                       | L0300580.0388                                                                       | 18 x 1     |
| L0200580.0390                                                                     | L0300500.0390                                                                     | L0300510.0390                                                                     | L0300501.0390                                                                     | L0300530.0390                                                                     | L0300550.0390                                                                      | L0300560.0390                                                                       | L0300580.0390                                                                       | 18 x 1,5   |
| L0200580.0391                                                                     | L0300500.0391                                                                     | L0300510.0391                                                                     | L0300501.0391                                                                     | L0300530.0391                                                                     | L0300550.0391                                                                      | L0300560.0391                                                                       | L0300580.0391                                                                       | 18 x 2     |
| L0200580.0404                                                                     | L0300500.0404                                                                     | L0300510.0404                                                                     | L0300501.0404                                                                     | L0300530.0404                                                                     | L0300550.0404                                                                      | L0300560.0404                                                                       | L0300580.0404                                                                       | 19 x 1     |
| L0200580.0420                                                                     | L0300500.0420                                                                     | L0300510.0420                                                                     | L0300501.0420                                                                     | L0300530.0420                                                                     | L0300550.0420                                                                      | L0300560.0420                                                                       | L0300580.0420                                                                       | 20 x 1     |
| L0200580.0422                                                                     | L0300500.0422                                                                     | L0300510.0422                                                                     | L0300501.0422                                                                     | L0300530.0422                                                                     | L0300550.0422                                                                      | L0300560.0422                                                                       | L0300580.0422                                                                       | 20 x 1,5   |
| L0200580.0423                                                                     | L0300500.0423                                                                     | L0300510.0423                                                                     | L0300501.0423                                                                     | L0300530.0423                                                                     | L0300550.0423                                                                      | L0300560.0423                                                                       | L0300580.0423                                                                       | 20 x 2     |
| L0200580.0428                                                                     | L0300500.0428                                                                     | L0300510.0428                                                                     | L0300501.0428                                                                     | L0300530.0428                                                                     | L0300550.0428                                                                      | L0300560.0428                                                                       | L0300580.0428                                                                       | 21 x 1     |
| L0200580.0436                                                                     | L0300500.0436                                                                     | L0300510.0436                                                                     | L0300501.0436                                                                     | L0300530.0436                                                                     | L0300550.0436                                                                      | L0300560.0436                                                                       | L0300580.0436                                                                       | 22 x 1     |
| L0200580.0438                                                                     | L0300500.0438                                                                     | L0300510.0438                                                                     | L0300501.0438                                                                     | L0300530.0438                                                                     | L0300550.0438                                                                      | L0300560.0438                                                                       | L0300580.0438                                                                       | 22 x 1,5   |
| L0200580.0439                                                                     | L0300500.0439                                                                     | L0300510.0439                                                                     | L0300501.0439                                                                     | L0300530.0439                                                                     | L0300550.0439                                                                      | L0300560.0439                                                                       | L0300580.0439                                                                       | 22 x 2     |
| L0200580.0443                                                                     | L0300500.0443                                                                     | L0300510.0443                                                                     | L0300501.0443                                                                     | L0300530.0443                                                                     | L0300550.0443                                                                      | L0300560.0443                                                                       | L0300580.0443                                                                       | 23 x 1     |
| L0200580.0450                                                                     | L0300500.0450                                                                     | L0300510.0450                                                                     | L0300501.0450                                                                     | L0300530.0450                                                                     | L0300550.0450                                                                      | L0300560.0450                                                                       | L0300580.0450                                                                       | 24 x 1     |
| L0200580.0452                                                                     | L0300500.0452                                                                     | L0300510.0452                                                                     | L0300501.0452                                                                     | L0300530.0452                                                                     | L0300550.0452                                                                      | L0300560.0452                                                                       | L0300580.0452                                                                       | 24 x 1,5   |
| L0200580.0453                                                                     | L0300500.0453                                                                     | L0300510.0453                                                                     | L0300501.0453                                                                     | L0300530.0453                                                                     | L0300550.0453                                                                      | L0300560.0453                                                                       | L0300580.0453                                                                       | 24 x 2     |
| L0200580.0456                                                                     | L0300500.0456                                                                     | L0300510.0456                                                                     | L0300501.0456                                                                     | L0300530.0456                                                                     | L0300550.0456                                                                      | L0300560.0456                                                                       | L0300580.0456                                                                       | 25 x 1     |
| L0200580.0458                                                                     | L0300500.0458                                                                     | L0300510.0458                                                                     | L0300501.0458                                                                     | L0300530.0458                                                                     | L0300550.0458                                                                      | L0300560.0458                                                                       | L0300580.0458                                                                       | 25 x 1,5   |
| L0200580.0459                                                                     | L0300500.0459                                                                     | L0300510.0459                                                                     | L0300501.0459                                                                     | L0300530.0459                                                                     | L0300550.0459                                                                      | L0300560.0459                                                                       | L0300580.0459                                                                       | 25 x 2     |
| L0200580.0462                                                                     | L0300500.0462                                                                     | L0300510.0462                                                                     | L0300501.0462                                                                     | L0300530.0462                                                                     | L0300550.0462                                                                      | L0300560.0462                                                                       | L0300580.0462                                                                       | 26 x 1     |
| L0200580.0464                                                                     | L0300500.0464                                                                     | L0300510.0464                                                                     | L0300501.0464                                                                     | L0300530.0464                                                                     | L0300550.0464                                                                      | L0300560.0464                                                                       | L0300580.0464                                                                       | 26 x 1,5   |
| L0200580.0465                                                                     | L0300500.0465                                                                     | L0300510.0465                                                                     | L0300501.0465                                                                     | L0300530.0465                                                                     | L0300550.0465                                                                      | L0300560.0465                                                                       | L0300580.0465                                                                       | 26 x 2     |



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

**MF**

DIN 13



Lehrenmaße nach DIN ISO 1502  
Gauge dimensions acc. DIN ISO 1502

Toleranz · Tolerance  
Beschichtung · Coating

6g

4h

6h

6e

6g <sup>1)</sup>

4h

LH

LH

G-GUT-LR

G-GUT-LR

G-GUT-LR

G-GUT-LR

G-GUT-LR  
LHG-GUT-LR  
LH

|    |    |     |     | ø d <sub>1</sub><br>mm | P<br>mm |               | ø d <sub>1</sub> -LH | ø d <sub>1</sub> -LH | ø d <sub>1</sub> -LH | ø d <sub>1</sub> -LH | ø d <sub>1</sub> -LH | ø d <sub>1</sub> -LH |
|----|----|-----|-----|------------------------|---------|---------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|    |    |     |     |                        |         |               |                      |                      |                      |                      | LH                   | LH                   |
| M  | 27 | x   | 1   |                        |         |               | L0200500.0468        | L0200510.0468        | L0200501.0468        | L0200530.0468        | L0200550.0468        | L0200560.0468        |
|    | 27 | x   | 1,5 |                        |         |               | L0200500.0470        | L0200510.0470        | L0200501.0470        | L0200530.0470        | L0200550.0470        | L0200560.0470        |
|    | 27 | x   | 2   |                        |         |               | L0200500.0471        | L0200510.0471        | L0200501.0471        | L0200530.0471        | L0200550.0471        | L0200560.0471        |
|    | 28 | x   | 1   |                        |         |               | L0200500.0474        | L0200510.0474        | L0200501.0474        | L0200530.0474        | L0200550.0474        | L0200560.0474        |
|    | 28 | x   | 1,5 |                        |         |               | L0200500.0476        | L0200510.0476        | L0200501.0476        | L0200530.0476        | L0200550.0476        | L0200560.0476        |
|    | 28 | x   | 2   |                        |         |               | L0200500.0477        | L0200510.0477        | L0200501.0477        | L0200530.0477        | L0200550.0477        | L0200560.0477        |
|    | 30 | x   | 1   |                        |         |               | L0200500.0488        | L0200510.0488        | L0200501.0488        | L0200530.0488        | L0200550.0488        | L0200560.0488        |
|    | 30 | x   | 1,5 |                        |         |               | L0200500.0490        | L0200510.0490        | L0200501.0490        | L0200530.0490        | L0200550.0490        | L0200560.0490        |
|    | 30 | x   | 2   |                        |         |               | L0200500.0491        | L0200510.0491        | L0200501.0491        | L0200530.0491        | L0200550.0491        | L0200560.0491        |
|    | 30 | x   | 3   |                        |         |               | L0200500.0492        | L0200510.0492        | L0200501.0492        | L0200530.0492        | L0200550.0492        | L0200560.0492        |
|    | 32 | x   | 1   |                        |         |               | L0200500.0502        | L0200510.0502        | L0200501.0502        | L0200530.0502        | L0200550.0502        | L0200560.0502        |
|    | 32 | x   | 1,5 |                        |         |               | L0200500.0504        | L0200510.0504        | L0200501.0504        | L0200530.0504        | L0200550.0504        | L0200560.0504        |
|    | 32 | x   | 2   |                        |         |               | L0200500.0505        | L0200510.0505        | L0200501.0505        | L0200530.0505        | L0200550.0505        | L0200560.0505        |
|    | 33 | x   | 1   |                        |         |               | L0200500.0509        | L0200510.0509        | L0200501.0509        | L0200530.0509        | L0200550.0509        | L0200560.0509        |
|    | 33 | x   | 1,5 |                        |         |               | L0200500.0511        | L0200510.0511        | L0200501.0511        | L0200530.0511        | L0200550.0511        | L0200560.0511        |
|    | 33 | x   | 2   |                        |         |               | L0200500.0512        | L0200510.0512        | L0200501.0512        | L0200530.0512        | L0200550.0512        | L0200560.0512        |
|    | 33 | x   | 3   |                        |         |               | L0200500.0513        | L0200510.0513        | L0200501.0513        | L0200530.0513        | L0200550.0513        | L0200560.0513        |
|    | 34 | x   | 1   |                        |         |               | L0200500.0516        | L0200510.0516        | L0200501.0516        | L0200530.0516        | L0200550.0516        | L0200560.0516        |
|    | 34 | x   | 1,5 |                        |         |               | L0200500.0518        | L0200510.0518        | L0200501.0518        | L0200530.0518        | L0200550.0518        | L0200560.0518        |
|    | 34 | x   | 2   |                        |         |               | L0200500.0519        | L0200510.0519        | L0200501.0519        | L0200530.0519        | L0200550.0519        | L0200560.0519        |
|    | 35 | x   | 1   |                        |         |               | L0200500.0523        | L0200510.0523        | L0200501.0523        | L0200530.0523        | L0200550.0523        | L0200560.0523        |
|    | 35 | x   | 1,5 |                        |         |               | L0200500.0525        | L0200510.0525        | L0200501.0525        | L0200530.0525        | L0200550.0525        | L0200560.0525        |
|    | 35 | x   | 2   |                        |         |               | L0200500.0526        | L0200510.0526        | L0200501.0526        | L0200530.0526        | L0200550.0526        | L0200560.0526        |
|    | 36 | x   | 1   |                        |         |               | L0200500.0530        | L0200510.0530        | L0200501.0530        | L0200530.0530        | L0200550.0530        | L0200560.0530        |
|    | 36 | x   | 1,5 |                        |         |               | L0200500.0532        | L0200510.0532        | L0200501.0532        | L0200530.0532        | L0200550.0532        | L0200560.0532        |
|    | 36 | x   | 2   |                        |         |               | L0200500.0533        | L0200510.0533        | L0200501.0533        | L0200530.0533        | L0200550.0533        | L0200560.0533        |
|    | 36 | x   | 3   |                        |         |               | L0200500.0534        | L0200510.0534        | L0200501.0534        | L0200530.0534        | L0200550.0534        | L0200560.0534        |
|    | 38 | x   | 1   |                        |         |               | L0200500.0544        | L0200510.0544        | L0200501.0544        | L0200530.0544        | L0200550.0544        | L0200560.0544        |
|    | 38 | x   | 1,5 |                        |         |               | L0200500.0546        | L0200510.0546        | L0200501.0546        | L0200530.0546        | L0200550.0546        | L0200560.0546        |
|    | 38 | x   | 2   |                        |         |               | L0200500.0547        | L0200510.0547        | L0200501.0547        | L0200530.0547        | L0200550.0547        | L0200560.0547        |
|    | 39 | x   | 1   |                        |         |               | L0200500.0551        | L0200510.0551        | L0200501.0551        | L0200530.0551        | L0200550.0551        | L0200560.0551        |
|    | 39 | x   | 1,5 |                        |         |               | L0200500.0553        | L0200510.0553        | L0200501.0553        | L0200530.0553        | L0200550.0553        | L0200560.0553        |
|    | 39 | x   | 2   |                        |         |               | L0200500.0554        | L0200510.0554        | L0200501.0554        | L0200530.0554        | L0200550.0554        | L0200560.0554        |
|    | 39 | x   | 3   |                        |         |               | L0200500.0555        | L0200510.0555        | L0200501.0555        | L0200530.0555        | L0200550.0555        | L0200560.0555        |
|    | 40 | x   | 1   |                        |         |               | L0200500.0558        | L0200510.0558        | L0200501.0558        | L0200530.0558        | L0200550.0558        | L0200560.0558        |
|    | 40 | x   | 1,5 |                        |         |               | L0200500.0560        | L0200510.0560        | L0200501.0560        | L0200530.0560        | L0200550.0560        | L0200560.0560        |
|    | 40 | x   | 2   |                        |         |               | L0200500.0561        | L0200510.0561        | L0200501.0561        | L0200530.0561        | L0200550.0561        | L0200560.0561        |
|    | 40 | x   | 3   |                        |         |               | L0200500.0562        | L0200510.0562        | L0200501.0562        | L0200530.0562        | L0200550.0562        | L0200560.0562        |
|    | 42 | x   | 1   |                        |         |               | L0200500.0572        | L0200510.0572        | L0200501.0572        | L0200530.0572        | L0200550.0572        | L0200560.0572        |
|    | 42 | x   | 1,5 |                        |         |               | L0200500.0574        | L0200510.0574        | L0200501.0574        | L0200530.0574        | L0200550.0574        | L0200560.0574        |
|    | 42 | x   | 2   |                        |         |               | L0200500.0575        | L0200510.0575        | L0200501.0575        | L0200530.0575        | L0200550.0575        | L0200560.0575        |
|    | 42 | x   | 3   |                        |         |               | L0200500.0576        | L0200510.0576        | L0200501.0576        | L0200530.0576        | L0200550.0576        | L0200560.0576        |
|    | 45 | x   | 1   |                        |         |               | L0200500.0593        | L0200510.0593        | L0200501.0593        | L0200530.0593        | L0200550.0593        | L0200560.0593        |
|    | 45 | x   | 1,5 |                        |         |               | L0200500.0595        | L0200510.0595        | L0200501.0595        | L0200530.0595        | L0200550.0595        | L0200560.0595        |
|    | 45 | x   | 2   |                        |         |               | L0200500.0596        | L0200510.0596        | L0200501.0596        | L0200530.0596        | L0200550.0596        | L0200560.0596        |
|    | 45 | x   | 3   |                        |         |               | L0200500.0597        | L0200510.0597        | L0200501.0597        | L0200530.0597        | L0200550.0597        | L0200560.0597        |
|    | 48 | x   | 1   |                        |         |               | L0200500.0614        | L0200510.0614        | L0200501.0614        | L0200530.0614        | L0200550.0614        | L0200560.0614        |
|    | 48 | x   | 1,5 |                        |         |               | L0200500.0616        | L0200510.0616        | L0200501.0616        | L0200530.0616        | L0200550.0616        | L0200560.0616        |
|    | 48 | x   | 2   |                        |         |               | L0200500.0617        | L0200510.0617        | L0200501.0617        | L0200530.0617        | L0200550.0617        | L0200560.0617        |
|    | 48 | x   | 3   |                        |         |               | L0200500.0618        | L0200510.0618        | L0200501.0618        | L0200530.0618        | L0200550.0618        | L0200560.0618        |
|    | 50 | x   | 1   |                        |         |               | L0200500.0628        | L0200510.0628        | L0200501.0628        | L0200530.0628        | L0200550.0628        | L0200560.0628        |
|    | 50 | x   | 1,5 |                        |         |               | L0200500.0630        | L0200510.0630        | L0200501.0630        | L0200530.0630        | L0200550.0630        | L0200560.0630        |
| 50 | x  | 2   |     |                        |         | L0200500.0631 | L0200510.0631        | L0200501.0631        | L0200530.0631        | L0200550.0631        | L0200560.0631        |                      |
| 50 | x  | 3   |     |                        |         | L0200500.0632 | L0200510.0632        | L0200501.0632        | L0200530.0632        | L0200550.0632        | L0200560.0632        |                      |
| 52 | x  | 1   |     |                        |         | L0200500.0642 | L0200510.0642        | L0200501.0642        | L0200530.0642        | L0200550.0642        | L0200560.0642        |                      |
| 52 | x  | 1,5 |     |                        |         | L0200500.0644 | L0200510.0644        | L0200501.0644        | L0200530.0644        | L0200550.0644        | L0200560.0644        |                      |
| 52 | x  | 2   |     |                        |         | L0200500.0645 | L0200510.0645        | L0200501.0645        | L0200530.0645        | L0200550.0645        | L0200560.0645        |                      |



|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |          |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|
|  |  |  |  |  |   |  |  |          |
|   |  |  |  |  |  |  |  |          |
| 6e                                                                                | 6g                                                                                | 4h                                                                                | 6h                                                                                | 6e                                                                                | 6g 1)                                                                              | 4h                                                                                  | 6e                                                                                  |          |
| LH                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | LH                                                                                 | LH                                                                                  | LH                                                                                  |          |
| G-GUT-LR<br>LH                                                                    | G-AUS-LR                                                                          | G-AUS-LR                                                                          | G-AUS-LR                                                                          | G-AUS-LR                                                                          | G-AUS-LR<br>LH                                                                     | G-AUS-LR<br>LH                                                                      | G-AUS-LR<br>LH                                                                      |          |
| L0200580.0468                                                                     | L0300500.0468                                                                     | L0300510.0468                                                                     | L0300501.0468                                                                     | L0300530.0468                                                                     | L0300550.0468                                                                      | L0300560.0468                                                                       | L0300580.0468                                                                       | M 27 x 1 |
| L0200580.0470                                                                     | L0300500.0470                                                                     | L0300510.0470                                                                     | L0300501.0470                                                                     | L0300530.0470                                                                     | L0300550.0470                                                                      | L0300560.0470                                                                       | L0300580.0470                                                                       | 27 x 1,5 |
| L0200580.0471                                                                     | L0300500.0471                                                                     | L0300510.0471                                                                     | L0300501.0471                                                                     | L0300530.0471                                                                     | L0300550.0471                                                                      | L0300560.0471                                                                       | L0300580.0471                                                                       | 27 x 2   |
| L0200580.0474                                                                     | L0300500.0474                                                                     | L0300510.0474                                                                     | L0300501.0474                                                                     | L0300530.0474                                                                     | L0300550.0474                                                                      | L0300560.0474                                                                       | L0300580.0474                                                                       | 28 x 1   |
| L0200580.0476                                                                     | L0300500.0476                                                                     | L0300510.0476                                                                     | L0300501.0476                                                                     | L0300530.0476                                                                     | L0300550.0476                                                                      | L0300560.0476                                                                       | L0300580.0476                                                                       | 28 x 1,5 |
| L0200580.0477                                                                     | L0300500.0477                                                                     | L0300510.0477                                                                     | L0300501.0477                                                                     | L0300530.0477                                                                     | L0300550.0477                                                                      | L0300560.0477                                                                       | L0300580.0477                                                                       | 28 x 2   |
| L0200580.0488                                                                     | L0300500.0488                                                                     | L0300510.0488                                                                     | L0300501.0488                                                                     | L0300530.0488                                                                     | L0300550.0488                                                                      | L0300560.0488                                                                       | L0300580.0488                                                                       | 30 x 1   |
| L0200580.0490                                                                     | L0300500.0490                                                                     | L0300510.0490                                                                     | L0300501.0490                                                                     | L0300530.0490                                                                     | L0300550.0490                                                                      | L0300560.0490                                                                       | L0300580.0490                                                                       | 30 x 1,5 |
| L0200580.0491                                                                     | L0300500.0491                                                                     | L0300510.0491                                                                     | L0300501.0491                                                                     | L0300530.0491                                                                     | L0300550.0491                                                                      | L0300560.0491                                                                       | L0300580.0491                                                                       | 30 x 2   |
| L0200580.0492                                                                     | L0300500.0492                                                                     | L0300510.0492                                                                     | L0300501.0492                                                                     | L0300530.0492                                                                     | L0300550.0492                                                                      | L0300560.0492                                                                       | L0300580.0492                                                                       | 30 x 3   |
| L0200580.0502                                                                     | L0300500.0502                                                                     | L0300510.0502                                                                     | L0300501.0502                                                                     | L0300530.0502                                                                     | L0300550.0502                                                                      | L0300560.0502                                                                       | L0300580.0502                                                                       | 32 x 1   |
| L0200580.0504                                                                     | L0300500.0504                                                                     | L0300510.0504                                                                     | L0300501.0504                                                                     | L0300530.0504                                                                     | L0300550.0504                                                                      | L0300560.0504                                                                       | L0300580.0504                                                                       | 32 x 1,5 |
| L0200580.0505                                                                     | L0300500.0505                                                                     | L0300510.0505                                                                     | L0300501.0505                                                                     | L0300530.0505                                                                     | L0300550.0505                                                                      | L0300560.0505                                                                       | L0300580.0505                                                                       | 32 x 2   |
| L0200580.0509                                                                     | L0300500.0509                                                                     | L0300510.0509                                                                     | L0300501.0509                                                                     | L0300530.0509                                                                     | L0300550.0509                                                                      | L0300560.0509                                                                       | L0300580.0509                                                                       | 33 x 1   |
| L0200580.0511                                                                     | L0300500.0511                                                                     | L0300510.0511                                                                     | L0300501.0511                                                                     | L0300530.0511                                                                     | L0300550.0511                                                                      | L0300560.0511                                                                       | L0300580.0511                                                                       | 33 x 1,5 |
| L0200580.0512                                                                     | L0300500.0512                                                                     | L0300510.0512                                                                     | L0300501.0512                                                                     | L0300530.0512                                                                     | L0300550.0512                                                                      | L0300560.0512                                                                       | L0300580.0512                                                                       | 33 x 2   |
| L0200580.0513                                                                     | L0300500.0513                                                                     | L0300510.0513                                                                     | L0300501.0513                                                                     | L0300530.0513                                                                     | L0300550.0513                                                                      | L0300560.0513                                                                       | L0300580.0513                                                                       | 33 x 3   |
| L0200580.0516                                                                     | L0300500.0516                                                                     | L0300510.0516                                                                     | L0300501.0516                                                                     | L0300530.0516                                                                     | L0300550.0516                                                                      | L0300560.0516                                                                       | L0300580.0516                                                                       | 34 x 1   |
| L0200580.0518                                                                     | L0300500.0518                                                                     | L0300510.0518                                                                     | L0300501.0518                                                                     | L0300530.0518                                                                     | L0300550.0518                                                                      | L0300560.0518                                                                       | L0300580.0518                                                                       | 34 x 1,5 |
| L0200580.0519                                                                     | L0300500.0519                                                                     | L0300510.0519                                                                     | L0300501.0519                                                                     | L0300530.0519                                                                     | L0300550.0519                                                                      | L0300560.0519                                                                       | L0300580.0519                                                                       | 34 x 2   |
| L0200580.0523                                                                     | L0300500.0523                                                                     | L0300510.0523                                                                     | L0300501.0523                                                                     | L0300530.0523                                                                     | L0300550.0523                                                                      | L0300560.0523                                                                       | L0300580.0523                                                                       | 35 x 1   |
| L0200580.0525                                                                     | L0300500.0525                                                                     | L0300510.0525                                                                     | L0300501.0525                                                                     | L0300530.0525                                                                     | L0300550.0525                                                                      | L0300560.0525                                                                       | L0300580.0525                                                                       | 35 x 1,5 |
| L0200580.0526                                                                     | L0300500.0526                                                                     | L0300510.0526                                                                     | L0300501.0526                                                                     | L0300530.0526                                                                     | L0300550.0526                                                                      | L0300560.0526                                                                       | L0300580.0526                                                                       | 35 x 2   |
| L0200580.0530                                                                     | L0300500.0530                                                                     | L0300510.0530                                                                     | L0300501.0530                                                                     | L0300530.0530                                                                     | L0300550.0530                                                                      | L0300560.0530                                                                       | L0300580.0530                                                                       | 36 x 1   |
| L0200580.0532                                                                     | L0300500.0532                                                                     | L0300510.0532                                                                     | L0300501.0532                                                                     | L0300530.0532                                                                     | L0300550.0532                                                                      | L0300560.0532                                                                       | L0300580.0532                                                                       | 36 x 1,5 |
| L0200580.0533                                                                     | L0300500.0533                                                                     | L0300510.0533                                                                     | L0300501.0533                                                                     | L0300530.0533                                                                     | L0300550.0533                                                                      | L0300560.0533                                                                       | L0300580.0533                                                                       | 36 x 2   |
| L0200580.0534                                                                     | L0300500.0534                                                                     | L0300510.0534                                                                     | L0300501.0534                                                                     | L0300530.0534                                                                     | L0300550.0534                                                                      | L0300560.0534                                                                       | L0300580.0534                                                                       | 36 x 3   |
| L0200580.0544                                                                     | L0300500.0544                                                                     | L0300510.0544                                                                     | L0300501.0544                                                                     | L0300530.0544                                                                     | L0300550.0544                                                                      | L0300560.0544                                                                       | L0300580.0544                                                                       | 38 x 1   |
| L0200580.0546                                                                     | L0300500.0546                                                                     | L0300510.0546                                                                     | L0300501.0546                                                                     | L0300530.0546                                                                     | L0300550.0546                                                                      | L0300560.0546                                                                       | L0300580.0546                                                                       | 38 x 1,5 |
| L0200580.0547                                                                     | L0300500.0547                                                                     | L0300510.0547                                                                     | L0300501.0547                                                                     | L0300530.0547                                                                     | L0300550.0547                                                                      | L0300560.0547                                                                       | L0300580.0547                                                                       | 38 x 2   |
| L0200580.0551                                                                     | L0300500.0551                                                                     | L0300510.0551                                                                     | L0300501.0551                                                                     | L0300530.0551                                                                     | L0300550.0551                                                                      | L0300560.0551                                                                       | L0300580.0551                                                                       | 39 x 1   |
| L0200580.0553                                                                     | L0300500.0553                                                                     | L0300510.0553                                                                     | L0300501.0553                                                                     | L0300530.0553                                                                     | L0300550.0553                                                                      | L0300560.0553                                                                       | L0300580.0553                                                                       | 39 x 1,5 |
| L0200580.0554                                                                     | L0300500.0554                                                                     | L0300510.0554                                                                     | L0300501.0554                                                                     | L0300530.0554                                                                     | L0300550.0554                                                                      | L0300560.0554                                                                       | L0300580.0554                                                                       | 39 x 2   |
| L0200580.0555                                                                     | L0300500.0555                                                                     | L0300510.0555                                                                     | L0300501.0555                                                                     | L0300530.0555                                                                     | L0300550.0555                                                                      | L0300560.0555                                                                       | L0300580.0555                                                                       | 39 x 3   |
| L0200580.0558                                                                     | L0300500.0558                                                                     | L0300510.0558                                                                     | L0300501.0558                                                                     | L0300530.0558                                                                     | L0300550.0558                                                                      | L0300560.0558                                                                       | L0300580.0558                                                                       | 40 x 1   |
| L0200580.0560                                                                     | L0300500.0560                                                                     | L0300510.0560                                                                     | L0300501.0560                                                                     | L0300530.0560                                                                     | L0300550.0560                                                                      | L0300560.0560                                                                       | L0300580.0560                                                                       | 40 x 1,5 |
| L0200580.0561                                                                     | L0300500.0561                                                                     | L0300510.0561                                                                     | L0300501.0561                                                                     | L0300530.0561                                                                     | L0300550.0561                                                                      | L0300560.0561                                                                       | L0300580.0561                                                                       | 40 x 2   |
| L0200580.0562                                                                     | L0300500.0562                                                                     | L0300510.0562                                                                     | L0300501.0562                                                                     | L0300530.0562                                                                     | L0300550.0562                                                                      | L0300560.0562                                                                       | L0300580.0562                                                                       | 40 x 3   |
| L0200580.0572                                                                     | L0300500.0572                                                                     | L0300510.0572                                                                     | L0300501.0572                                                                     | L0300530.0572                                                                     | L0300550.0572                                                                      | L0300560.0572                                                                       | L0300580.0572                                                                       | 42 x 1   |
| L0200580.0574                                                                     | L0300500.0574                                                                     | L0300510.0574                                                                     | L0300501.0574                                                                     | L0300530.0574                                                                     | L0300550.0574                                                                      | L0300560.0574                                                                       | L0300580.0574                                                                       | 42 x 1,5 |
| L0200580.0575                                                                     | L0300500.0575                                                                     | L0300510.0575                                                                     | L0300501.0575                                                                     | L0300530.0575                                                                     | L0300550.0575                                                                      | L0300560.0575                                                                       | L0300580.0575                                                                       | 42 x 2   |
| L0200580.0576                                                                     | L0300500.0576                                                                     | L0300510.0576                                                                     | L0300501.0576                                                                     | L0300530.0576                                                                     | L0300550.0576                                                                      | L0300560.0576                                                                       | L0300580.0576                                                                       | 42 x 3   |
| L0200580.0593                                                                     | L0300500.0593                                                                     | L0300510.0593                                                                     | L0300501.0593                                                                     | L0300530.0593                                                                     | L0300550.0593                                                                      | L0300560.0593                                                                       | L0300580.0593                                                                       | 45 x 1   |
| L0200580.0595                                                                     | L0300500.0595                                                                     | L0300510.0595                                                                     | L0300501.0595                                                                     | L0300530.0595                                                                     | L0300550.0595                                                                      | L0300560.0595                                                                       | L0300580.0595                                                                       | 45 x 1,5 |
| L0200580.0596                                                                     | L0300500.0596                                                                     | L0300510.0596                                                                     | L0300501.0596                                                                     | L0300530.0596                                                                     | L0300550.0596                                                                      | L0300560.0596                                                                       | L0300580.0596                                                                       | 45 x 2   |
| L0200580.0597                                                                     | L0300500.0597                                                                     | L0300510.0597                                                                     | L0300501.0597                                                                     | L0300530.0597                                                                     | L0300550.0597                                                                      | L0300560.0597                                                                       | L0300580.0597                                                                       | 45 x 3   |
| L0200580.0614                                                                     | L0300500.0614                                                                     | L0300510.0614                                                                     | L0300501.0614                                                                     | L0300530.0614                                                                     | L0300550.0614                                                                      | L0300560.0614                                                                       | L0300580.0614                                                                       | 48 x 1   |
| L0200580.0616                                                                     | L0300500.0616                                                                     | L0300510.0616                                                                     | L0300501.0616                                                                     | L0300530.0616                                                                     | L0300550.0616                                                                      | L0300560.0616                                                                       | L0300580.0616                                                                       | 48 x 1,5 |
| L0200580.0617                                                                     | L0300500.0617                                                                     | L0300510.0617                                                                     | L0300501.0617                                                                     | L0300530.0617                                                                     | L0300550.0617                                                                      | L0300560.0617                                                                       | L0300580.0617                                                                       | 48 x 2   |
| L0200580.0618                                                                     | L0300500.0618                                                                     | L0300510.0618                                                                     | L0300501.0618                                                                     | L0300530.0618                                                                     | L0300550.0618                                                                      | L0300560.0618                                                                       | L0300580.0618                                                                       | 48 x 3   |
| L0200580.0628                                                                     | L0300500.0628                                                                     | L0300510.0628                                                                     | L0300501.0628                                                                     | L0300530.0628                                                                     | L0300550.0628                                                                      | L0300560.0628                                                                       | L0300580.0628                                                                       | 50 x 1   |
| L0200580.0630                                                                     | L0300500.0630                                                                     | L0300510.0630                                                                     | L0300501.0630                                                                     | L0300530.0630                                                                     | L0300550.0630                                                                      | L0300560.0630                                                                       | L0300580.0630                                                                       | 50 x 1,5 |
| L0200580.0631                                                                     | L0300500.0631                                                                     | L0300510.0631                                                                     | L0300501.0631                                                                     | L0300530.0631                                                                     | L0300550.0631                                                                      | L0300560.0631                                                                       | L0300580.0631                                                                       | 50 x 2   |
| L0200580.0632                                                                     | L0300500.0632                                                                     | L0300510.0632                                                                     | L0300501.0632                                                                     | L0300530.0632                                                                     | L0300550.0632                                                                      | L0300560.0632                                                                       | L0300580.0632                                                                       | 50 x 3   |
| L0200580.0642                                                                     | L0300500.0642                                                                     | L0300510.0642                                                                     | L0300501.0642                                                                     | L0300530.0642                                                                     | L0300550.0642                                                                      | L0300560.0642                                                                       | L0300580.0642                                                                       | 52 x 1   |
| L0200580.0644                                                                     | L0300500.0644                                                                     | L0300510.0644                                                                     | L0300501.0644                                                                     | L0300530.0644                                                                     | L0300550.0644                                                                      | L0300560.0644                                                                       | L0300580.0644                                                                       | 52 x 1,5 |
| L0200580.0645                                                                     | L0300500.0645                                                                     | L0300510.0645                                                                     | L0300501.0645                                                                     | L0300530.0645                                                                     | L0300550.0645                                                                      | L0300560.0645                                                                       | L0300580.0645                                                                       | 52 x 2   |



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# MF

DIN 13



Lehrenmaße nach DIN ISO 1502  
Gauge dimensions acc. DIN ISO 1502

Toleranz · Tolerance  
Beschichtung · Coating

6g

4h

6h

6e

6g 1)

4h

LH

LH

G-GUT-LR

G-GUT-LR

G-GUT-LR

G-GUT-LR

G-GUT-LR  
LH

G-GUT-LR  
LH

|          | ø d <sub>1</sub><br>mm | P<br>mm |               |               |               |               |               |
|----------|------------------------|---------|---------------|---------------|---------------|---------------|---------------|
| <b>M</b> | 52 x 3                 |         | L0200500.0646 | L0200510.0646 | L0200501.0646 | L0200530.0646 | L0200550.0646 |
|          | 55 x 1                 |         | L0200500.0653 | L0200510.0653 | L0200501.0653 | L0200530.0653 | L0200550.0653 |
|          | 55 x 1,5               |         | L0200500.0654 | L0200510.0654 | L0200501.0654 | L0200530.0654 | L0200550.0654 |
|          | 55 x 2                 |         | L0200500.0655 | L0200510.0655 | L0200501.0655 | L0200530.0655 | L0200550.0655 |
|          | 55 x 3                 |         | L0200500.0656 | L0200510.0656 | L0200501.0656 | L0200530.0656 | L0200550.0656 |
|          | 56 x 1                 |         | L0200500.0658 | L0200510.0658 | L0200501.0658 | L0200530.0658 | L0200550.0658 |
|          | 56 x 1,5               |         | L0200500.0659 | L0200510.0659 | L0200501.0659 | L0200530.0659 | L0200550.0659 |
|          | 56 x 2                 |         | L0200500.0660 | L0200510.0660 | L0200501.0660 | L0200530.0660 | L0200550.0660 |
|          | 56 x 3                 |         | L0200500.0661 | L0200510.0661 | L0200501.0661 | L0200530.0661 | L0200550.0661 |
|          | 58 x 1                 |         | L0200500.0663 | L0200510.0663 | L0200501.0663 | L0200530.0663 | L0200550.0663 |
|          | 58 x 1,5               |         | L0200500.0664 | L0200510.0664 | L0200501.0664 | L0200530.0664 | L0200550.0664 |
|          | 58 x 2                 |         | L0200500.0665 | L0200510.0665 | L0200501.0665 | L0200530.0665 | L0200550.0665 |
|          | 58 x 3                 |         | L0200500.0666 | L0200510.0666 | L0200501.0666 | L0200530.0666 | L0200550.0666 |
|          | 60 x 1                 |         | L0200500.0668 | L0200510.0668 | L0200501.0668 | L0200530.0668 | L0200550.0668 |
|          | 60 x 1,5               |         | L0200500.0669 | L0200510.0669 | L0200501.0669 | L0200530.0669 | L0200550.0669 |
|          | 60 x 2                 |         | L0200500.0670 | L0200510.0670 | L0200501.0670 | L0200530.0670 | L0200550.0670 |
|          | 60 x 3                 |         | L0200500.0671 | L0200510.0671 | L0200501.0671 | L0200530.0671 | L0200550.0671 |
|          | 62 x 1                 |         | L0200500.0673 | L0200510.0673 | L0200501.0673 | L0200530.0673 | L0200550.0673 |
|          | 62 x 1,5               |         | L0200500.0674 | L0200510.0674 | L0200501.0674 | L0200530.0674 | L0200550.0674 |
|          | 62 x 2                 |         | L0200500.0675 | L0200510.0675 | L0200501.0675 | L0200530.0675 | L0200550.0675 |
|          | 62 x 3                 |         | L0200500.0676 | L0200510.0676 | L0200501.0676 | L0200530.0676 | L0200550.0676 |
|          | 64 x 1                 |         | L0200500.0678 | L0200510.0678 | L0200501.0678 | L0200530.0678 | L0200550.0678 |
|          | 64 x 1,5               |         | L0200500.0679 | L0200510.0679 | L0200501.0679 | L0200530.0679 | L0200550.0679 |
|          | 64 x 2                 |         | L0200500.0680 | L0200510.0680 | L0200501.0680 | L0200530.0680 | L0200550.0680 |
|          | 64 x 3                 |         | L0200500.0681 | L0200510.0681 | L0200501.0681 | L0200530.0681 | L0200550.0681 |
|          | 65 x 1                 |         | L0200500.0683 | L0200510.0683 | L0200501.0683 | L0200530.0683 | L0200550.0683 |
|          | 65 x 1,5               |         | L0200500.0684 | L0200510.0684 | L0200501.0684 | L0200530.0684 | L0200550.0684 |
|          | 65 x 2                 |         | L0200500.0685 | L0200510.0685 | L0200501.0685 | L0200530.0685 | L0200550.0685 |
|          | 65 x 3                 |         | L0200500.0686 | L0200510.0686 | L0200501.0686 | L0200530.0686 | L0200550.0686 |
|          | 68 x 1                 |         | L0200500.0688 | L0200510.0688 | L0200501.0688 | L0200530.0688 | L0200550.0688 |
|          | 68 x 1,5               |         | L0200500.0689 | L0200510.0689 | L0200501.0689 | L0200530.0689 | L0200550.0689 |
|          | 68 x 2                 |         | L0200500.0690 | L0200510.0690 | L0200501.0690 | L0200530.0690 | L0200550.0690 |
|          | 68 x 3                 |         | L0200500.0691 | L0200510.0691 | L0200501.0691 | L0200530.0691 | L0200550.0691 |
|          | 70 x 1                 |         | L0200500.0693 | L0200510.0693 | L0200501.0693 | L0200530.0693 | L0200550.0693 |
|          | 70 x 1,5               |         | L0200500.0694 | L0200510.0694 | L0200501.0694 | L0200530.0694 | L0200550.0694 |
|          | 70 x 2                 |         | L0200500.0695 | L0200510.0695 | L0200501.0695 | L0200530.0695 | L0200550.0695 |
|          | 70 x 3                 |         | L0200500.0696 | L0200510.0696 | L0200501.0696 | L0200530.0696 | L0200550.0696 |
|          | 72 x 1                 |         | L0200500.0699 | L0200510.0699 | L0200501.0699 | L0200530.0699 | L0200550.0699 |
|          | 72 x 1,5               |         | L0200500.0700 | L0200510.0700 | L0200501.0700 | L0200530.0700 | L0200550.0700 |
|          | 72 x 2                 |         | L0200500.0701 | L0200510.0701 | L0200501.0701 | L0200530.0701 | L0200550.0701 |
|          | 72 x 3                 |         | L0200500.0702 | L0200510.0702 | L0200501.0702 | L0200530.0702 | L0200550.0702 |
|          | 75 x 1                 |         | L0200500.0705 | L0200510.0705 | L0200501.0705 | L0200530.0705 | L0200550.0705 |
|          | 75 x 1,5               |         | L0200500.0706 | L0200510.0706 | L0200501.0706 | L0200530.0706 | L0200550.0706 |
|          | 75 x 2                 |         | L0200500.0707 | L0200510.0707 | L0200501.0707 | L0200530.0707 | L0200550.0707 |
|          | 75 x 3                 |         | L0200500.0708 | L0200510.0708 | L0200501.0708 | L0200530.0708 | L0200550.0708 |
|          | 76 x 1                 |         | L0200500.0711 | L0200510.0711 | L0200501.0711 | L0200530.0711 | L0200550.0711 |
|          | 76 x 1,5               |         | L0200500.0712 | L0200510.0712 | L0200501.0712 | L0200530.0712 | L0200550.0712 |
|          | 76 x 2                 |         | L0200500.0713 | L0200510.0713 | L0200501.0713 | L0200530.0713 | L0200550.0713 |
|          | 76 x 3                 |         | L0200500.0714 | L0200510.0714 | L0200501.0714 | L0200530.0714 | L0200550.0714 |
|          | 78 x 1                 |         | L0200500.0717 | L0200510.0717 | L0200501.0717 | L0200530.0717 | L0200550.0717 |
|          | 78 x 1,5               |         | L0200500.0718 | L0200510.0718 | L0200501.0718 | L0200530.0718 | L0200550.0718 |
|          | 78 x 2                 |         | L0200500.0719 | L0200510.0719 | L0200501.0719 | L0200530.0719 | L0200550.0719 |
|          | 80 x 1                 |         | L0200500.0723 | L0200510.0723 | L0200501.0723 | L0200530.0723 | L0200550.0723 |
|          | 80 x 1,5               |         | L0200500.0724 | L0200510.0724 | L0200501.0724 | L0200530.0724 | L0200550.0724 |
|          | 80 x 2                 |         | L0200500.0725 | L0200510.0725 | L0200501.0725 | L0200530.0725 | L0200550.0725 |
|          | 80 x 3                 |         | L0200500.0726 | L0200510.0726 | L0200501.0726 | L0200530.0726 | L0200550.0726 |
|          | 82 x 1,5               |         | L0200500.0729 | L0200510.0729 | L0200501.0729 | L0200530.0729 | L0200550.0729 |



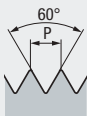
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |          |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|
|  |  |  |  |  |   |  |  |          |
|   |  |  |  |  |  |  |  |          |
| 6e                                                                                | 6g                                                                                | 4h                                                                                | 6h                                                                                | 6e                                                                                | 6g 1)                                                                              | 4h                                                                                  | 6e                                                                                  |          |
| LH                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | LH                                                                                 | LH                                                                                  | LH                                                                                  |          |
| G-GUT-LR<br>LH                                                                    | G-AUS-LR                                                                          | G-AUS-LR                                                                          | G-AUS-LR                                                                          | G-AUS-LR                                                                          | G-AUS-LR<br>LH                                                                     | G-AUS-LR<br>LH                                                                      | G-AUS-LR<br>LH                                                                      |          |
| L0200580.0646                                                                     | L0300500.0646                                                                     | L0300510.0646                                                                     | L0300501.0646                                                                     | L0300530.0646                                                                     | L0300550.0646                                                                      | L0300560.0646                                                                       | L0300580.0646                                                                       | M 52 x 3 |
| L0200580.0653                                                                     | L0300500.0653                                                                     | L0300510.0653                                                                     | L0300501.0653                                                                     | L0300530.0653                                                                     | L0300550.0653                                                                      | L0300560.0653                                                                       | L0300580.0653                                                                       | 55 x 1   |
| L0200580.0654                                                                     | L0300500.0654                                                                     | L0300510.0654                                                                     | L0300501.0654                                                                     | L0300530.0654                                                                     | L0300550.0654                                                                      | L0300560.0654                                                                       | L0300580.0654                                                                       | 55 x 1,5 |
| L0200580.0655                                                                     | L0300500.0655                                                                     | L0300510.0655                                                                     | L0300501.0655                                                                     | L0300530.0655                                                                     | L0300550.0655                                                                      | L0300560.0655                                                                       | L0300580.0655                                                                       | 55 x 2   |
| L0200580.0656                                                                     | L0300500.0656                                                                     | L0300510.0656                                                                     | L0300501.0656                                                                     | L0300530.0656                                                                     | L0300550.0656                                                                      | L0300560.0656                                                                       | L0300580.0656                                                                       | 55 x 3   |
| L0200580.0658                                                                     | L0300500.0658                                                                     | L0300510.0658                                                                     | L0300501.0658                                                                     | L0300530.0658                                                                     | L0300550.0658                                                                      | L0300560.0658                                                                       | L0300580.0658                                                                       | 56 x 1   |
| L0200580.0659                                                                     | L0300500.0659                                                                     | L0300510.0659                                                                     | L0300501.0659                                                                     | L0300530.0659                                                                     | L0300550.0659                                                                      | L0300560.0659                                                                       | L0300580.0659                                                                       | 56 x 1,5 |
| L0200580.0660                                                                     | L0300500.0660                                                                     | L0300510.0660                                                                     | L0300501.0660                                                                     | L0300530.0660                                                                     | L0300550.0660                                                                      | L0300560.0660                                                                       | L0300580.0660                                                                       | 56 x 2   |
| L0200580.0661                                                                     | L0300500.0661                                                                     | L0300510.0661                                                                     | L0300501.0661                                                                     | L0300530.0661                                                                     | L0300550.0661                                                                      | L0300560.0661                                                                       | L0300580.0661                                                                       | 56 x 3   |
| L0200580.0663                                                                     | L0300500.0663                                                                     | L0300510.0663                                                                     | L0300501.0663                                                                     | L0300530.0663                                                                     | L0300550.0663                                                                      | L0300560.0663                                                                       | L0300580.0663                                                                       | 58 x 1   |
| L0200580.0664                                                                     | L0300500.0664                                                                     | L0300510.0664                                                                     | L0300501.0664                                                                     | L0300530.0664                                                                     | L0300550.0664                                                                      | L0300560.0664                                                                       | L0300580.0664                                                                       | 58 x 1,5 |
| L0200580.0665                                                                     | L0300500.0665                                                                     | L0300510.0665                                                                     | L0300501.0665                                                                     | L0300530.0665                                                                     | L0300550.0665                                                                      | L0300560.0665                                                                       | L0300580.0665                                                                       | 58 x 2   |
| L0200580.0666                                                                     | L0300500.0666                                                                     | L0300510.0666                                                                     | L0300501.0666                                                                     | L0300530.0666                                                                     | L0300550.0666                                                                      | L0300560.0666                                                                       | L0300580.0666                                                                       | 58 x 3   |
| L0200580.0668                                                                     | L0300500.0668                                                                     | L0300510.0668                                                                     | L0300501.0668                                                                     | L0300530.0668                                                                     | L0300550.0668                                                                      | L0300560.0668                                                                       | L0300580.0668                                                                       | 60 x 1   |
| L0200580.0669                                                                     | L0300500.0669                                                                     | L0300510.0669                                                                     | L0300501.0669                                                                     | L0300530.0669                                                                     | L0300550.0669                                                                      | L0300560.0669                                                                       | L0300580.0669                                                                       | 60 x 1,5 |
| L0200580.0670                                                                     | L0300500.0670                                                                     | L0300510.0670                                                                     | L0300501.0670                                                                     | L0300530.0670                                                                     | L0300550.0670                                                                      | L0300560.0670                                                                       | L0300580.0670                                                                       | 60 x 2   |
| L0200580.0671                                                                     | L0300500.0671                                                                     | L0300510.0671                                                                     | L0300501.0671                                                                     | L0300530.0671                                                                     | L0300550.0671                                                                      | L0300560.0671                                                                       | L0300580.0671                                                                       | 60 x 3   |
| L0200580.0673                                                                     | L0300500.0673                                                                     | L0300510.0673                                                                     | L0300501.0673                                                                     | L0300530.0673                                                                     | L0300550.0673                                                                      | L0300560.0673                                                                       | L0300580.0673                                                                       | 62 x 1   |
| L0200580.0674                                                                     | L0300500.0674                                                                     | L0300510.0674                                                                     | L0300501.0674                                                                     | L0300530.0674                                                                     | L0300550.0674                                                                      | L0300560.0674                                                                       | L0300580.0674                                                                       | 62 x 1,5 |
| L0200580.0675                                                                     | L0300500.0675                                                                     | L0300510.0675                                                                     | L0300501.0675                                                                     | L0300530.0675                                                                     | L0300550.0675                                                                      | L0300560.0675                                                                       | L0300580.0675                                                                       | 62 x 2   |
| L0200580.0676                                                                     | L0300500.0676                                                                     | L0300510.0676                                                                     | L0300501.0676                                                                     | L0300530.0676                                                                     | L0300550.0676                                                                      | L0300560.0676                                                                       | L0300580.0676                                                                       | 62 x 3   |
| L0200580.0678                                                                     | L0300500.0678                                                                     | L0300510.0678                                                                     | L0300501.0678                                                                     | L0300530.0678                                                                     | L0300550.0678                                                                      | L0300560.0678                                                                       | L0300580.0678                                                                       | 64 x 1   |
| L0200580.0679                                                                     | L0300500.0679                                                                     | L0300510.0679                                                                     | L0300501.0679                                                                     | L0300530.0679                                                                     | L0300550.0679                                                                      | L0300560.0679                                                                       | L0300580.0679                                                                       | 64 x 1,5 |
| L0200580.0680                                                                     | L0300500.0680                                                                     | L0300510.0680                                                                     | L0300501.0680                                                                     | L0300530.0680                                                                     | L0300550.0680                                                                      | L0300560.0680                                                                       | L0300580.0680                                                                       | 64 x 2   |
| L0200580.0681                                                                     | L0300500.0681                                                                     | L0300510.0681                                                                     | L0300501.0681                                                                     | L0300530.0681                                                                     | L0300550.0681                                                                      | L0300560.0681                                                                       | L0300580.0681                                                                       | 64 x 3   |
| L0200580.0683                                                                     | L0300500.0683                                                                     | L0300510.0683                                                                     | L0300501.0683                                                                     | L0300530.0683                                                                     | L0300550.0683                                                                      | L0300560.0683                                                                       | L0300580.0683                                                                       | 65 x 1   |
| L0200580.0684                                                                     | L0300500.0684                                                                     | L0300510.0684                                                                     | L0300501.0684                                                                     | L0300530.0684                                                                     | L0300550.0684                                                                      | L0300560.0684                                                                       | L0300580.0684                                                                       | 65 x 1,5 |
| L0200580.0685                                                                     | L0300500.0685                                                                     | L0300510.0685                                                                     | L0300501.0685                                                                     | L0300530.0685                                                                     | L0300550.0685                                                                      | L0300560.0685                                                                       | L0300580.0685                                                                       | 65 x 2   |
| L0200580.0686                                                                     | L0300500.0686                                                                     | L0300510.0686                                                                     | L0300501.0686                                                                     | L0300530.0686                                                                     | L0300550.0686                                                                      | L0300560.0686                                                                       | L0300580.0686                                                                       | 65 x 3   |
| L0200580.0688                                                                     | L0300500.0688                                                                     | L0300510.0688                                                                     | L0300501.0688                                                                     | L0300530.0688                                                                     | L0300550.0688                                                                      | L0300560.0688                                                                       | L0300580.0688                                                                       | 68 x 1   |
| L0200580.0689                                                                     | L0300500.0689                                                                     | L0300510.0689                                                                     | L0300501.0689                                                                     | L0300530.0689                                                                     | L0300550.0689                                                                      | L0300560.0689                                                                       | L0300580.0689                                                                       | 68 x 1,5 |
| L0200580.0690                                                                     | L0300500.0690                                                                     | L0300510.0690                                                                     | L0300501.0690                                                                     | L0300530.0690                                                                     | L0300550.0690                                                                      | L0300560.0690                                                                       | L0300580.0690                                                                       | 68 x 2   |
| L0200580.0691                                                                     | L0300500.0691                                                                     | L0300510.0691                                                                     | L0300501.0691                                                                     | L0300530.0691                                                                     | L0300550.0691                                                                      | L0300560.0691                                                                       | L0300580.0691                                                                       | 68 x 3   |
| L0200580.0693                                                                     | L0300500.0693                                                                     | L0300510.0693                                                                     | L0300501.0693                                                                     | L0300530.0693                                                                     | L0300550.0693                                                                      | L0300560.0693                                                                       | L0300580.0693                                                                       | 70 x 1   |
| L0200580.0694                                                                     | L0300500.0694                                                                     | L0300510.0694                                                                     | L0300501.0694                                                                     | L0300530.0694                                                                     | L0300550.0694                                                                      | L0300560.0694                                                                       | L0300580.0694                                                                       | 70 x 1,5 |
| L0200580.0695                                                                     | L0300500.0695                                                                     | L0300510.0695                                                                     | L0300501.0695                                                                     | L0300530.0695                                                                     | L0300550.0695                                                                      | L0300560.0695                                                                       | L0300580.0695                                                                       | 70 x 2   |
| L0200580.0696                                                                     | L0300500.0696                                                                     | L0300510.0696                                                                     | L0300501.0696                                                                     | L0300530.0696                                                                     | L0300550.0696                                                                      | L0300560.0696                                                                       | L0300580.0696                                                                       | 70 x 3   |
| L0200580.0699                                                                     | L0300500.0699                                                                     | L0300510.0699                                                                     | L0300501.0699                                                                     | L0300530.0699                                                                     | L0300550.0699                                                                      | L0300560.0699                                                                       | L0300580.0699                                                                       | 72 x 1   |
| L0200580.0700                                                                     | L0300500.0700                                                                     | L0300510.0700                                                                     | L0300501.0700                                                                     | L0300530.0700                                                                     | L0300550.0700                                                                      | L0300560.0700                                                                       | L0300580.0700                                                                       | 72 x 1,5 |
| L0200580.0701                                                                     | L0300500.0701                                                                     | L0300510.0701                                                                     | L0300501.0701                                                                     | L0300530.0701                                                                     | L0300550.0701                                                                      | L0300560.0701                                                                       | L0300580.0701                                                                       | 72 x 2   |
| L0200580.0702                                                                     | L0300500.0702                                                                     | L0300510.0702                                                                     | L0300501.0702                                                                     | L0300530.0702                                                                     | L0300550.0702                                                                      | L0300560.0702                                                                       | L0300580.0702                                                                       | 72 x 3   |
| L0200580.0705                                                                     | L0300500.0705                                                                     | L0300510.0705                                                                     | L0300501.0705                                                                     | L0300530.0705                                                                     | L0300550.0705                                                                      | L0300560.0705                                                                       | L0300580.0705                                                                       | 75 x 1   |
| L0200580.0706                                                                     | L0300500.0706                                                                     | L0300510.0706                                                                     | L0300501.0706                                                                     | L0300530.0706                                                                     | L0300550.0706                                                                      | L0300560.0706                                                                       | L0300580.0706                                                                       | 75 x 1,5 |
| L0200580.0707                                                                     | L0300500.0707                                                                     | L0300510.0707                                                                     | L0300501.0707                                                                     | L0300530.0707                                                                     | L0300550.0707                                                                      | L0300560.0707                                                                       | L0300580.0707                                                                       | 75 x 2   |
| L0200580.0708                                                                     | L0300500.0708                                                                     | L0300510.0708                                                                     | L0300501.0708                                                                     | L0300530.0708                                                                     | L0300550.0708                                                                      | L0300560.0708                                                                       | L0300580.0708                                                                       | 75 x 3   |
| L0200580.0711                                                                     | L0300500.0711                                                                     | L0300510.0711                                                                     | L0300501.0711                                                                     | L0300530.0711                                                                     | L0300550.0711                                                                      | L0300560.0711                                                                       | L0300580.0711                                                                       | 76 x 1   |
| L0200580.0712                                                                     | L0300500.0712                                                                     | L0300510.0712                                                                     | L0300501.0712                                                                     | L0300530.0712                                                                     | L0300550.0712                                                                      | L0300560.0712                                                                       | L0300580.0712                                                                       | 76 x 1,5 |
| L0200580.0713                                                                     | L0300500.0713                                                                     | L0300510.0713                                                                     | L0300501.0713                                                                     | L0300530.0713                                                                     | L0300550.0713                                                                      | L0300560.0713                                                                       | L0300580.0713                                                                       | 76 x 2   |
| L0200580.0714                                                                     | L0300500.0714                                                                     | L0300510.0714                                                                     | L0300501.0714                                                                     | L0300530.0714                                                                     | L0300550.0714                                                                      | L0300560.0714                                                                       | L0300580.0714                                                                       | 76 x 3   |
| L0200580.0717                                                                     | L0300500.0717                                                                     | L0300510.0717                                                                     | L0300501.0717                                                                     | L0300530.0717                                                                     | L0300550.0717                                                                      | L0300560.0717                                                                       | L0300580.0717                                                                       | 78 x 1   |
| L0200580.0718                                                                     | L0300500.0718                                                                     | L0300510.0718                                                                     | L0300501.0718                                                                     | L0300530.0718                                                                     | L0300550.0718                                                                      | L0300560.0718                                                                       | L0300580.0718                                                                       | 78 x 1,5 |
| L0200580.0719                                                                     | L0300500.0719                                                                     | L0300510.0719                                                                     | L0300501.0719                                                                     | L0300530.0719                                                                     | L0300550.0719                                                                      | L0300560.0719                                                                       | L0300580.0719                                                                       | 78 x 2   |
| L0200580.0723                                                                     | L0300500.0723                                                                     | L0300510.0723                                                                     | L0300501.0723                                                                     | L0300530.0723                                                                     | L0300550.0723                                                                      | L0300560.0723                                                                       | L0300580.0723                                                                       | 80 x 1   |
| L0200580.0724                                                                     | L0300500.0724                                                                     | L0300510.0724                                                                     | L0300501.0724                                                                     | L0300530.0724                                                                     | L0300550.0724                                                                      | L0300560.0724                                                                       | L0300580.0724                                                                       | 80 x 1,5 |
| L0200580.0725                                                                     | L0300500.0725                                                                     | L0300510.0725                                                                     | L0300501.0725                                                                     | L0300530.0725                                                                     | L0300550.0725                                                                      | L0300560.0725                                                                       | L0300580.0725                                                                       | 80 x 2   |
| L0200580.0726                                                                     | L0300500.0726                                                                     | L0300510.0726                                                                     | L0300501.0726                                                                     | L0300530.0726                                                                     | L0300550.0726                                                                      | L0300560.0726                                                                       | L0300580.0726                                                                       | 80 x 3   |
| L0200580.0729                                                                     | L0300500.0729                                                                     | L0300510.0729                                                                     | L0300501.0729                                                                     | L0300530.0729                                                                     | L0300550.0729                                                                      | L0300560.0729                                                                       | L0300580.0729                                                                       | 82 x 1,5 |



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# MF

DIN 13



Lehrenmaße nach DIN ISO 1502  
Gauge dimensions acc. DIN ISO 1502

Toleranz · Tolerance  
Beschichtung · Coating

6g

4h

6h

6e

6g <sup>1)</sup>

4h

LH

LH

G-GUT-LR

G-GUT-LR

G-GUT-LR

G-GUT-LR

G-GUT-LR  
LH

G-GUT-LR  
LH

|          | ø d <sub>1</sub><br>mm |   | P<br>mm |               |               |               |               |               |               |
|----------|------------------------|---|---------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>M</b> | 82                     | x | 2       | L0200500.0730 | L0200510.0730 | L0200501.0730 | L0200530.0730 | L0200550.0730 | L0200560.0730 |
|          | 85                     | x | 1,5     | L0200500.0734 | L0200510.0734 | L0200501.0734 | L0200530.0734 | L0200550.0734 | L0200560.0734 |
|          | 85                     | x | 2       | L0200500.0735 | L0200510.0735 | L0200501.0735 | L0200530.0735 | L0200550.0735 | L0200560.0735 |
|          | 85                     | x | 3       | L0200500.0736 | L0200510.0736 | L0200501.0736 | L0200530.0736 | L0200550.0736 | L0200560.0736 |
|          | 88                     | x | 1,5     | L0200500.0739 | L0200510.0739 | L0200501.0739 | L0200530.0739 | L0200550.0739 | L0200560.0739 |
|          | 88                     | x | 2       | L0200500.0740 | L0200510.0740 | L0200501.0740 | L0200530.0740 | L0200550.0740 | L0200560.0740 |
|          | 90                     | x | 1,5     | L0200500.0744 | L0200510.0744 | L0200501.0744 | L0200530.0744 | L0200550.0744 | L0200560.0744 |
|          | 90                     | x | 2       | L0200500.0745 | L0200510.0745 | L0200501.0745 | L0200530.0745 | L0200550.0745 | L0200560.0745 |
|          | 90                     | x | 3       | L0200500.0746 | L0200510.0746 | L0200501.0746 | L0200530.0746 | L0200550.0746 | L0200560.0746 |
|          | 92                     | x | 1,5     | L0200500.0749 | L0200510.0749 | L0200501.0749 | L0200530.0749 | L0200550.0749 | L0200560.0749 |
|          | 92                     | x | 2       | L0200500.0750 | L0200510.0750 | L0200501.0750 | L0200530.0750 | L0200550.0750 | L0200560.0750 |
|          | 95                     | x | 1,5     | L0200500.0754 | L0200510.0754 | L0200501.0754 | L0200530.0754 | L0200550.0754 | L0200560.0754 |
|          | 95                     | x | 2       | L0200500.0755 | L0200510.0755 | L0200501.0755 | L0200530.0755 | L0200550.0755 | L0200560.0755 |
|          | 95                     | x | 3       | L0200500.0756 | L0200510.0756 | L0200501.0756 | L0200530.0756 | L0200550.0756 | L0200560.0756 |
|          | 98                     | x | 1,5     | L0200500.0759 | L0200510.0759 | L0200501.0759 | L0200530.0759 | L0200550.0759 | L0200560.0759 |
|          | 98                     | x | 2       | L0200500.0760 | L0200510.0760 | L0200501.0760 | L0200530.0760 | L0200550.0760 | L0200560.0760 |
|          | 100                    | x | 1,5     | L0200500.0764 | L0200510.0764 | L0200501.0764 | L0200530.0764 | L0200550.0764 | L0200560.0764 |
|          | 100                    | x | 2       | L0200500.0765 | L0200510.0765 | L0200501.0765 | L0200530.0765 | L0200550.0765 | L0200560.0765 |
|          | 100                    | x | 3       | L0200500.0766 | L0200510.0766 | L0200501.0766 | L0200530.0766 | L0200550.0766 | L0200560.0766 |

← M2 x 0,25 - M82 x 1,5

<sup>1)</sup> Toleranz „6h“ auf Anfrage  
Tolerance “6h” upon request



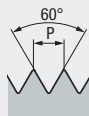
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |           |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------|
|  |  |  |  |  |   |  |  |           |
|   |  |  |  |  |  |  |  |           |
| 6e                                                                                | 6g                                                                                | 4h                                                                                | 6h                                                                                | 6e                                                                                | 6g 1)                                                                              | 4h                                                                                  | 6e                                                                                  |           |
| LH                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | LH                                                                                 | LH                                                                                  | LH                                                                                  |           |
| G-GUT-LR<br>LH                                                                    | G-AUS-LR                                                                          | G-AUS-LR                                                                          | G-AUS-LR                                                                          | G-AUS-LR                                                                          | G-AUS-LR<br>LH                                                                     | G-AUS-LR<br>LH                                                                      | G-AUS-LR<br>LH                                                                      |           |
| L0200580.0730                                                                     | L0300500.0730                                                                     | L0300510.0730                                                                     | L0300501.0730                                                                     | L0300530.0730                                                                     | L0300550.0730                                                                      | L0300560.0730                                                                       | L0300580.0730                                                                       | M 82 x 2  |
| L0200580.0734                                                                     | L0300500.0734                                                                     | L0300510.0734                                                                     | L0300501.0734                                                                     | L0300530.0734                                                                     | L0300550.0734                                                                      | L0300560.0734                                                                       | L0300580.0734                                                                       | 85 x 1,5  |
| L0200580.0735                                                                     | L0300500.0735                                                                     | L0300510.0735                                                                     | L0300501.0735                                                                     | L0300530.0735                                                                     | L0300550.0735                                                                      | L0300560.0735                                                                       | L0300580.0735                                                                       | 85 x 2    |
| L0200580.0736                                                                     | L0300500.0736                                                                     | L0300510.0736                                                                     | L0300501.0736                                                                     | L0300530.0736                                                                     | L0300550.0736                                                                      | L0300560.0736                                                                       | L0300580.0736                                                                       | 85 x 3    |
| L0200580.0739                                                                     | L0300500.0739                                                                     | L0300510.0739                                                                     | L0300501.0739                                                                     | L0300530.0739                                                                     | L0300550.0739                                                                      | L0300560.0739                                                                       | L0300580.0739                                                                       | 88 x 1,5  |
| L0200580.0740                                                                     | L0300500.0740                                                                     | L0300510.0740                                                                     | L0300501.0740                                                                     | L0300530.0740                                                                     | L0300550.0740                                                                      | L0300560.0740                                                                       | L0300580.0740                                                                       | 88 x 2    |
| L0200580.0744                                                                     | L0300500.0744                                                                     | L0300510.0744                                                                     | L0300501.0744                                                                     | L0300530.0744                                                                     | L0300550.0744                                                                      | L0300560.0744                                                                       | L0300580.0744                                                                       | 90 x 1,5  |
| L0200580.0745                                                                     | L0300500.0745                                                                     | L0300510.0745                                                                     | L0300501.0745                                                                     | L0300530.0745                                                                     | L0300550.0745                                                                      | L0300560.0745                                                                       | L0300580.0745                                                                       | 90 x 2    |
| L0200580.0746                                                                     | L0300500.0746                                                                     | L0300510.0746                                                                     | L0300501.0746                                                                     | L0300530.0746                                                                     | L0300550.0746                                                                      | L0300560.0746                                                                       | L0300580.0746                                                                       | 90 x 3    |
| L0200580.0749                                                                     | L0300500.0749                                                                     | L0300510.0749                                                                     | L0300501.0749                                                                     | L0300530.0749                                                                     | L0300550.0749                                                                      | L0300560.0749                                                                       | L0300580.0749                                                                       | 92 x 1,5  |
| L0200580.0750                                                                     | L0300500.0750                                                                     | L0300510.0750                                                                     | L0300501.0750                                                                     | L0300530.0750                                                                     | L0300550.0750                                                                      | L0300560.0750                                                                       | L0300580.0750                                                                       | 92 x 2    |
| L0200580.0754                                                                     | L0300500.0754                                                                     | L0300510.0754                                                                     | L0300501.0754                                                                     | L0300530.0754                                                                     | L0300550.0754                                                                      | L0300560.0754                                                                       | L0300580.0754                                                                       | 95 x 1,5  |
| L0200580.0755                                                                     | L0300500.0755                                                                     | L0300510.0755                                                                     | L0300501.0755                                                                     | L0300530.0755                                                                     | L0300550.0755                                                                      | L0300560.0755                                                                       | L0300580.0755                                                                       | 95 x 2    |
| L0200580.0756                                                                     | L0300500.0756                                                                     | L0300510.0756                                                                     | L0300501.0756                                                                     | L0300530.0756                                                                     | L0300550.0756                                                                      | L0300560.0756                                                                       | L0300580.0756                                                                       | 95 x 3    |
| L0200580.0759                                                                     | L0300500.0759                                                                     | L0300510.0759                                                                     | L0300501.0759                                                                     | L0300530.0759                                                                     | L0300550.0759                                                                      | L0300560.0759                                                                       | L0300580.0759                                                                       | 98 x 1,5  |
| L0200580.0760                                                                     | L0300500.0760                                                                     | L0300510.0760                                                                     | L0300501.0760                                                                     | L0300530.0760                                                                     | L0300550.0760                                                                      | L0300560.0760                                                                       | L0300580.0760                                                                       | 98 x 2    |
| L0200580.0764                                                                     | L0300500.0764                                                                     | L0300510.0764                                                                     | L0300501.0764                                                                     | L0300530.0764                                                                     | L0300550.0764                                                                      | L0300560.0764                                                                       | L0300580.0764                                                                       | 100 x 1,5 |
| L0200580.0765                                                                     | L0300500.0765                                                                     | L0300510.0765                                                                     | L0300501.0765                                                                     | L0300530.0765                                                                     | L0300550.0765                                                                      | L0300560.0765                                                                       | L0300580.0765                                                                       | 100 x 2   |
| L0200580.0766                                                                     | L0300500.0766                                                                     | L0300510.0766                                                                     | L0300501.0766                                                                     | L0300530.0766                                                                     | L0300550.0766                                                                      | L0300560.0766                                                                       | L0300580.0766                                                                       | 100 x 3   |



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| <b>UNC</b>                 |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# UNC

ASME B1.1



Lehrenmaße nach ANSI/ASME B1.2  
Gauge dimensions acc. ANSI/ASME B1.2

Toleranz · Tolerance  
Beschichtung · Coating

2B

3B

2B

2B

G-GR-LD

G-GR-LD

G-GUT-LD

G-AUS-LD

Ø d<sub>1</sub>  
inch inch P  
Gg/1" (tpi)

|        |        |       |               |               |               |               |
|--------|--------|-------|---------------|---------------|---------------|---------------|
| Nr. 1  | 0.0730 | 64    | L0100100.5000 |               | L0120100.5000 | L0140100.5000 |
| Nr. 2  | 0.0860 | 56    | L0100100.5001 |               | L0120100.5001 | L0140100.5001 |
| Nr. 3  | 0.0990 | 48    | L0100100.5002 |               | L0120100.5002 | L0140100.5002 |
| Nr. 4  | 0.1120 | 40    | L0100100.5003 |               | L0120100.5003 | L0140100.5003 |
| Nr. 5  | 0.1250 | 40    | L0100100.5004 |               | L0120100.5004 | L0140100.5004 |
| Nr. 6  | 0.1380 | 32    | L0100100.5005 |               | L0120100.5005 | L0140100.5005 |
| Nr. 8  | 0.1640 | 32    | L0100100.5006 |               | L0120100.5006 | L0140100.5006 |
| Nr. 10 | 0.1900 | 24    | L0100100.5007 |               | L0120100.5007 | L0140100.5007 |
| Nr. 12 | 0.2160 | 24    | L0100100.5008 |               | L0120100.5008 | L0140100.5008 |
| 1/4    | 0.2500 | 20    | L0100100.5009 |               | L0120100.5009 | L0140100.5009 |
| 5/16   | 0.3125 | 18    | L0100100.5010 |               | L0120100.5010 | L0140100.5010 |
| 3/8    | 0.3750 | 16    | L0100100.5011 | L0100110.5011 | L0120100.5011 | L0140100.5011 |
| 7/16   | 0.4375 | 14    | L0100100.5012 | L0100110.5012 | L0120100.5012 | L0140100.5012 |
| 1/2    | 0.5000 | 13    | L0100100.5013 | L0100110.5013 | L0120100.5013 | L0140100.5013 |
| 9/16   | 0.5625 | 12    | L0100100.5014 | L0100110.5014 | L0120100.5014 | L0140100.5014 |
| 5/8    | 0.6250 | 11    | L0100100.5015 | L0100110.5015 | L0120100.5015 | L0140100.5015 |
| 3/4    | 0.7500 | 10    | L0100100.5016 | L0100110.5016 | L0120100.5016 | L0140100.5016 |
| 7/8    | 0.8750 | 9     | L0100100.5017 |               | L0120100.5017 | L0140100.5017 |
| 1"     | 1.0000 | 8     | L0100100.5018 |               | L0120100.5018 | L0140100.5018 |
| 1 1/8  | 1.1250 | 7     | L0100100.5019 |               | L0120100.5019 | L0140100.5019 |
| 1 1/4  | 1.2500 | 7     | L0100100.5020 |               | L0120100.5020 | L0140100.5020 |
| 1 3/8  | 1.3750 | 6     | L0100100.5021 |               | L0120100.5021 | L0140100.5021 |
| 1 1/2  | 1.5000 | 6     | L0100100.5022 |               | L0120100.5022 | L0140100.5022 |
| 1 3/4  | 1.7500 | 5     |               |               | L0120100.5023 | L0140100.5023 |
| 2"     | 2.0000 | 4 1/2 |               |               | L0120100.5024 | L0140100.5024 |

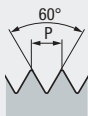
> Ø 1 1/2 nur als Einzellehrdorne erhältlich (G-GUT-LD, G-AUS-LD)  
available only as separate plug gauges (G-GUT-LD, G-AUS-LD)

Gewindelehren für UNEF, UN und UNS auf Anfrage  
Thread gauges for UNEF, UN and UNS upon request



**UNC**

ASME B1.1



Lehrenmaße nach ANSI/ASME B1.2  
Gauge dimensions acc. ANSI/ASME B1.2



Toleranz · Tolerance  
Beschichtung · Coating

2A

3A

2A

3A

G-GUT-LR

G-GUT-LR

G-AUS-LR

G-AUS-LR

ø d<sub>1</sub>  
inch inch P  
Gg/1" (tpi)

|        |        |       |               |               |               |               |  |
|--------|--------|-------|---------------|---------------|---------------|---------------|--|
| Nr. 1  | 0.0730 | 64    | L0200500.5000 |               | L0300500.5000 |               |  |
| Nr. 2  | 0.0860 | 56    | L0200500.5001 |               | L0300500.5001 |               |  |
| Nr. 3  | 0.0990 | 48    | L0200500.5002 |               | L0300500.5002 |               |  |
| Nr. 4  | 0.1120 | 40    | L0200500.5003 |               | L0300500.5003 |               |  |
| Nr. 5  | 0.1250 | 40    | L0200500.5004 |               | L0300500.5004 |               |  |
| Nr. 6  | 0.1380 | 32    | L0200500.5005 |               | L0300500.5005 |               |  |
| Nr. 8  | 0.1640 | 32    | L0200500.5006 |               | L0300500.5006 |               |  |
| Nr. 10 | 0.1900 | 24    | L0200500.5007 |               | L0300500.5007 |               |  |
| Nr. 12 | 0.2160 | 24    | L0200500.5008 |               | L0300500.5008 |               |  |
| 1/4    | 0.2500 | 20    | L0200500.5009 |               | L0300500.5009 |               |  |
| 5/16   | 0.3125 | 18    | L0200500.5010 |               | L0300500.5010 |               |  |
| 3/8    | 0.3750 | 16    | L0200500.5011 | L0200510.5011 | L0300500.5011 | L0300510.5011 |  |
| 7/16   | 0.4375 | 14    | L0200500.5012 | L0200510.5012 | L0300500.5012 | L0300510.5012 |  |
| 1/2    | 0.5000 | 13    | L0200500.5013 | L0200510.5013 | L0300500.5013 | L0300510.5013 |  |
| 9/16   | 0.5625 | 12    | L0200500.5014 | L0200510.5014 | L0300500.5014 | L0300510.5014 |  |
| 5/8    | 0.6250 | 11    | L0200500.5015 | L0200510.5015 | L0300500.5015 | L0300510.5015 |  |
| 3/4    | 0.7500 | 10    | L0200500.5016 | L0200510.5016 | L0300500.5016 | L0300510.5016 |  |
| 7/8    | 0.8750 | 9     | L0200500.5017 |               | L0300500.5017 |               |  |
| 1"     | 1.0000 | 8     | L0200500.5018 |               | L0300500.5018 |               |  |
| 1 1/8  | 1.1250 | 7     | L0200500.5019 |               | L0300500.5019 |               |  |
| 1 1/4  | 1.2500 | 7     | L0200500.5020 |               | L0300500.5020 |               |  |
| 1 3/8  | 1.3750 | 6     | L0200500.5021 |               | L0300500.5021 |               |  |
| 1 1/2  | 1.5000 | 6     | L0200500.5022 |               | L0300500.5022 |               |  |
| 1 3/4  | 1.7500 | 5     | L0200500.5023 |               | L0300500.5023 |               |  |
| 2"     | 2.0000 | 4 1/2 | L0200500.5024 |               | L0300500.5024 |               |  |

Gewindelehren für UNEF, UN und UNS auf Anfrage  
Thread gauges for UNEF, UN and UNS upon request

Product

Finder

M

MF

UNC

UNF

Rp, R, Rc

NPT, NPTF

BSW

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Glatt

Smooth

GT, TD

Zubehör

Accessories

PoCoSys

Kalibrieren

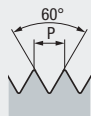
Calibration



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| <b>UNF</b>                 |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# UNF

ASME B1.1



Lehrenmaße nach ANSI/ASME B1.2  
Gauge dimensions acc. ANSI/ASME B1.2

Toleranz · Tolerance  
Beschichtung · Coating

2B

3B

2B

2B

G-GR-LD

G-GR-LD

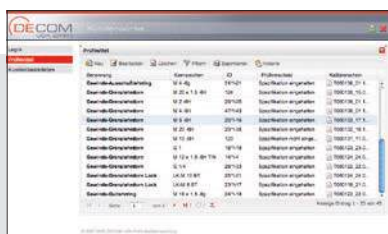
G-GUT-LD

G-AUS-LD

Ø d<sub>1</sub>  
inch inch  
P  
Gg/1" (tpi)

|        |        |    |               |               |               |               |
|--------|--------|----|---------------|---------------|---------------|---------------|
| Nr. 0  | 0.0600 | 80 | L0100100.5033 |               | L0120100.5033 | L0140100.5033 |
| Nr. 1  | 0.0730 | 72 | L0100100.5034 |               | L0120100.5034 | L0140100.5034 |
| Nr. 2  | 0.0860 | 64 | L0100100.5035 |               | L0120100.5035 | L0140100.5035 |
| Nr. 3  | 0.0990 | 56 | L0100100.5036 |               | L0120100.5036 | L0140100.5036 |
| Nr. 4  | 0.1120 | 48 | L0100100.5037 |               | L0120100.5037 | L0140100.5037 |
| Nr. 5  | 0.1250 | 44 | L0100100.5038 |               | L0120100.5038 | L0140100.5038 |
| Nr. 6  | 0.1380 | 40 | L0100100.5039 |               | L0120100.5039 | L0140100.5039 |
| Nr. 8  | 0.1640 | 36 | L0100100.5040 |               | L0120100.5040 | L0140100.5040 |
| Nr. 10 | 0.1900 | 32 | L0100100.5041 |               | L0120100.5041 | L0140100.5041 |
| Nr. 12 | 0.2160 | 28 | L0100100.5042 |               | L0120100.5042 | L0140100.5042 |
| 1/4    | 0.2500 | 28 | L0100100.5043 |               | L0120100.5043 | L0140100.5043 |
| 5/16   | 0.3125 | 24 | L0100100.5044 |               | L0120100.5044 | L0140100.5044 |
| 3/8    | 0.3750 | 24 | L0100100.5045 | L0100110.5045 | L0120100.5045 | L0140100.5045 |
| 7/16   | 0.4375 | 20 | L0100100.5046 | L0100110.5046 | L0120100.5046 | L0140100.5046 |
| 1/2    | 0.5000 | 20 | L0100100.5047 | L0100110.5047 | L0120100.5047 | L0140100.5047 |
| 9/16   | 0.5625 | 18 | L0100100.5048 | L0100110.5048 | L0120100.5048 | L0140100.5048 |
| 5/8    | 0.6250 | 18 | L0100100.5049 | L0100110.5049 | L0120100.5049 | L0140100.5049 |
| 3/4    | 0.7500 | 16 | L0100100.5050 | L0100110.5050 | L0120100.5050 | L0140100.5050 |
| 7/8    | 0.8750 | 14 | L0100100.5051 |               | L0120100.5051 | L0140100.5051 |
| 1"     | 1.0000 | 12 | L0100100.5052 |               | L0120100.5052 | L0140100.5052 |
| 1 1/8  | 1.1250 | 12 | L0100100.5053 |               | L0120100.5053 | L0140100.5053 |
| 1 1/4  | 1.2500 | 12 | L0100100.5054 |               | L0120100.5054 | L0140100.5054 |
| 1 3/8  | 1.3750 | 12 | L0100100.5055 |               | L0120100.5055 | L0140100.5055 |
| 1 1/2  | 1.5000 | 12 | L0100100.5056 |               | L0120100.5056 | L0140100.5056 |

Gewindelehren für UNEF, UN und UNS auf Anfrage  
Thread gauges for UNEF, UN and UNS upon request

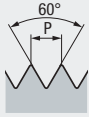


Prüfmittelverwaltungs-Software  
KalimeroNet siehe Seite 610

Inspection tool administration software  
KalimeroNet, see page 610

**UNF**

ASME B1.1



Lehrenmaße nach ANSI/ASME B1.2  
Gauge dimensions acc. ANSI/ASME B1.2



Toleranz · Tolerance  
Beschichtung · Coating

2A

3A

2A

3A

G-GUT-LR

G-GUT-LR

G-AUS-LR

G-AUS-LR

ø d<sub>1</sub>  
inch inch P  
Gg/1" (tpi)

|        |        |    |               |               |               |               |  |
|--------|--------|----|---------------|---------------|---------------|---------------|--|
| Nr. 0  | 0.0600 | 80 | L0200500.5033 |               | L0300500.5033 |               |  |
| Nr. 1  | 0.0730 | 72 | L0200500.5034 |               | L0300500.5034 |               |  |
| Nr. 2  | 0.0860 | 64 | L0200500.5035 |               | L0300500.5035 |               |  |
| Nr. 3  | 0.0990 | 56 | L0200500.5036 |               | L0300500.5036 |               |  |
| Nr. 4  | 0.1120 | 48 | L0200500.5037 |               | L0300500.5037 |               |  |
| Nr. 5  | 0.1250 | 44 | L0200500.5038 |               | L0300500.5038 |               |  |
| Nr. 6  | 0.1380 | 40 | L0200500.5039 |               | L0300500.5039 |               |  |
| Nr. 8  | 0.1640 | 36 | L0200500.5040 |               | L0300500.5040 |               |  |
| Nr. 10 | 0.1900 | 32 | L0200500.5041 |               | L0300500.5041 |               |  |
| Nr. 12 | 0.2160 | 28 | L0200500.5042 |               | L0300500.5042 |               |  |
| 1/4    | 0.2500 | 28 | L0200500.5043 |               | L0300500.5043 |               |  |
| 5/16   | 0.3125 | 24 | L0200500.5044 |               | L0300500.5044 |               |  |
| 3/8    | 0.3750 | 24 | L0200500.5045 | L0200510.5045 | L0300500.5045 | L0300510.5045 |  |
| 7/16   | 0.4375 | 20 | L0200500.5046 | L0200510.5046 | L0300500.5046 | L0300510.5046 |  |
| 1/2    | 0.5000 | 20 | L0200500.5047 | L0200510.5047 | L0300500.5047 | L0300510.5047 |  |
| 9/16   | 0.5625 | 18 | L0200500.5048 | L0200510.5048 | L0300500.5048 | L0300510.5048 |  |
| 5/8    | 0.6250 | 18 | L0200500.5049 | L0200510.5049 | L0300500.5049 | L0300510.5049 |  |
| 3/4    | 0.7500 | 16 | L0200500.5050 | L0200510.5050 | L0300500.5050 | L0300510.5050 |  |
| 7/8    | 0.8750 | 14 | L0200500.5051 |               | L0300500.5051 |               |  |
| 1"     | 1.0000 | 12 | L0200500.5052 |               | L0300500.5052 |               |  |
| 1 1/8  | 1.1250 | 12 | L0200500.5053 |               | L0300500.5053 |               |  |
| 1 1/4  | 1.2500 | 12 | L0200500.5054 |               | L0300500.5054 |               |  |
| 1 3/8  | 1.3750 | 12 | L0200500.5055 |               | L0300500.5055 |               |  |
| 1 1/2  | 1.5000 | 12 | L0200500.5056 |               | L0300500.5056 |               |  |

Gewindelehren für UNEF, UN und UNS auf Anfrage  
Thread gauges for UNEF, UN and UNS upon request

Product  
Finder

M

MF

UNC

UNF

Rp, R, Rc

NPT, NPTF

BSW

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Glatt

Smooth

GT, TD

Zubehör

Accessories

PoCoSys

Kalibrieren

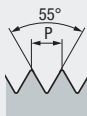
Calibration



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| <b>G</b>                   |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# G (BSP)

DIN EN ISO 228



Lehrenmaße nach DIN EN ISO 228-2  
Gauge dimensions acc. DIN EN ISO 228-2

Toleranz · Tolerance  
Beschichtung · Coating

A

A

|          | Nenngröße<br>Nom. size<br>Ø d <sub>1</sub> | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | G-GR-LD       | G-GUT-LD      | G-AUS-LD      |  | G-GUT-LR      | G-AUS-LR      |
|----------|--------------------------------------------|------------------------|------------------|---------------|---------------|---------------|--|---------------|---------------|
| <b>G</b> | 1/16                                       | 7,72                   | 28               | L0100100.4034 | L0120100.4034 | L0140100.4034 |  | L0200500.4034 | L0300500.4034 |
|          | 1/8                                        | 9,73                   | 28               | L0100100.4035 | L0120100.4035 | L0140100.4035 |  | L0200500.4035 | L0300500.4035 |
|          | 1/4                                        | 13,16                  | 19               | L0100100.4036 | L0120100.4036 | L0140100.4036 |  | L0200500.4036 | L0300500.4036 |
|          | 3/8                                        | 16,66                  | 19               | L0100100.4037 | L0120100.4037 | L0140100.4037 |  | L0200500.4037 | L0300500.4037 |
|          | 1/2                                        | 20,96                  | 14               | L0100100.4038 | L0120100.4038 | L0140100.4038 |  | L0200500.4038 | L0300500.4038 |
|          | 5/8                                        | 22,91                  | 14               | L0100100.4039 | L0120100.4039 | L0140100.4039 |  | L0200500.4039 | L0300500.4039 |
|          | 3/4                                        | 26,44                  | 14               | L0100100.4040 | L0120100.4040 | L0140100.4040 |  | L0200500.4040 | L0300500.4040 |
|          | 7/8                                        | 30,20                  | 14               | L0100100.4041 | L0120100.4041 | L0140100.4041 |  | L0200500.4041 | L0300500.4041 |
|          | 1"                                         | 33,25                  | 11               | L0100100.4042 | L0120100.4042 | L0140100.4042 |  | L0200500.4042 | L0300500.4042 |
|          | 1 1/8                                      | 37,90                  | 11               | L0100100.4043 | L0120100.4043 | L0140100.4043 |  | L0200500.4043 | L0300500.4043 |
|          | 1 1/4                                      | 41,91                  | 11               |               | L0120100.4044 | L0140100.4044 |  | L0200500.4044 | L0300500.4044 |
|          | 1 3/8                                      | 44,32                  | 11               |               | L0120100.4045 | L0140100.4045 |  | L0200500.4045 | L0300500.4045 |
|          | 1 1/2                                      | 47,80                  | 11               |               | L0120100.4046 | L0140100.4046 |  | L0200500.4046 | L0300500.4046 |
|          | 1 3/4                                      | 53,75                  | 11               |               | L0120100.4048 | L0140100.4048 |  | L0200500.4048 | L0300500.4048 |
|          | 2"                                         | 59,61                  | 11               |               | L0120100.4050 | L0140100.4050 |  | L0200500.4050 | L0300500.4050 |

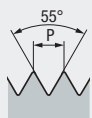
> G 1 1/8 nur als Einzelllehrdorne erhältlich (G-GUT-LD, G-AUS-LD)  
available only as separate plug gauges (G-GUT-LD, G-AUS-LD)

Gewinde-Lehrringe für Toleranz B auf Anfrage  
Thread ring gauges for Tolerance B upon request

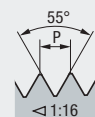




Rp



R, Rc



DIN EN 10226-1, DIN EN 10226-2, ISO 7-1

Lehrens-system nach  
DIN EN 10226-3, ISO 7-2  
Gauge system acc.  
DIN EN 10226-3, ISO 7-2



Arbeitslehren  
Work gauges

Gewinde-Prüflehren  
Inspection thread gauges



Lehre Nr. · Gauge no.

| Nenngröße<br>Nom. size<br>Ø d <sub>1</sub> | Ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | 1<br>Keg.<br>G-GR-LD | 2 <sup>1)</sup><br>Keg.<br>G-GR-LD-Aussp.<br>TIN | 3<br>Zyl.<br>G-GR-LR | 4<br>Keg.<br>G-GR-LR<br>(glatt) | 5<br>Keg.<br>G-Prüfdorn | 6<br>Zyl.<br>G-Prüf-ring |
|--------------------------------------------|------------------------|------------------|----------------------|--------------------------------------------------|----------------------|---------------------------------|-------------------------|--------------------------|
| <b>R</b>                                   | 1/16                   | 7,72             | L1800101.4068        | L1815101.4068                                    | L1850501.4068        | L1860501.4068                   | L1830501.4068           | L1870101.4068            |
|                                            | 1/8                    | 9,73             | L1800101.4069        | L1815101.4069                                    | L1850501.4069        | L1860501.4069                   | L1830501.4069           | L1870101.4069            |
|                                            | 1/4                    | 13,16            | L1800101.4070        | L1815101.4070                                    | L1850501.4070        | L1860501.4070                   | L1830501.4070           | L1870101.4070            |
|                                            | 3/8                    | 16,66            | L1800101.4071        | L1815101.4071                                    | L1850501.4071        | L1860501.4071                   | L1830501.4071           | L1870101.4071            |
|                                            | 1/2                    | 20,96            | L1800101.4072        | L1815101.4072                                    | L1850501.4072        | L1860501.4072                   | L1830501.4072           | L1870101.4072            |
|                                            | 3/4                    | 26,44            | L1800101.4073        | L1815101.4073                                    | L1850501.4073        | L1860501.4073                   | L1830501.4073           | L1870101.4073            |
|                                            | 1"                     | 33,25            | L1800101.4074        | L1815101.4074                                    | L1850501.4074        | L1860501.4074                   | L1830501.4074           | L1870101.4074            |
|                                            | 1 1/4                  | 41,91            | L1800101.4075        | L1815101.4075                                    | L1850501.4075        | L1860501.4075                   | L1830501.4075           | L1870101.4075            |
|                                            | 1 1/2                  | 47,80            | L1800101.4076        | L1815101.4076                                    | L1850501.4076        | L1860501.4076                   | L1830501.4076           | L1870101.4076            |
|                                            | 2"                     | 59,61            | L1800101.4077        | L1815101.4077                                    | L1850501.4077        | L1860501.4077                   | L1830501.4077           | L1870101.4077            |
|                                            | 2 1/2                  | 75,18            | L1800101.4078        | L1815101.4078                                    | L1850501.4078        | L1860501.4078                   | L1830501.4078           | L1870101.4078            |
|                                            | 3"                     | 87,88            | L1800101.4079        | L1815101.4079                                    | L1850501.4079        | L1860501.4079                   | L1830501.4079           | L1870101.4079            |
|                                            | 4"                     | 113,03           | L1800101.4080        | L1815101.4080                                    | L1850501.4080        | L1860501.4080                   | L1830501.4080           | L1870101.4080            |

<sup>1)</sup> Der Lehrdorn Nr. 2 ist auf Grund der Aussparung starker Beanspruchung ausgesetzt und deshalb TIN-beschichtet  
The thread plug gauge no. 2 is exposed to strong wear due to its recess, and is therefore TIN-coated

## Das neue Lehrens-system nach DIN EN 10226-3, ISO 7-2

Ziel der Normung war, ein weltweit akzeptiertes Lehrens-system für das **kegelige Außengewinde R**, das **zylindrisches Innengewinde Rp** und das **kegelige Innengewinde Rc** nach ISO 7 zu schaffen.

Bisherige Normen, z.B. die deutschen Normen DIN 2999-2 bis -6, die britische Norm BS 21, die französische Norm NF-E 03-165 und die italienische Norm UNI ISO 7-2:1984 sind ungültig.

## The new gauge system acc. DIN EN 10226-3, ISO 7-2

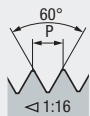
The standardisation has been undertaken with the aim of providing a worldwide accepted gauge system for the **tapered external thread R**, the **cylindrical internal thread Rp** and the **tapered internal thread Rc** acc. ISO 7.

Previous standards, e.g. the German standards DIN 2999-2 to -6, the British standard BS 21, the French standard NF-E 03-165 and the Italian standard UNI ISO 7-2:1984 do not apply anymore.



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| <b>NPT, NPTF</b>           |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# NPT



ANSI/ASME B1.20.1

**Ausführung 3-Step  
3-Step Design**

Lehrensystem ähnlich ANSI/ASME B1.20.1  
Gauge system sim. ANSI/ASME B1.20.1



| Nenngröße<br>Nom. size<br>ø d <sub>1</sub> | P<br>Gg/1" (tpi) | G-GR-LD<br>(L <sub>1</sub> )<br>NPT | G-GR-LR<br>(L <sub>1</sub> )<br>NPT |  |  |
|--------------------------------------------|------------------|-------------------------------------|-------------------------------------|--|--|
| 1/16                                       | 27               | L0500100.5763                       | L0600500.5763                       |  |  |
| 1/8                                        | 27               | L0500100.5764                       | L0600500.5764                       |  |  |
| 1/4                                        | 18               | L0500100.5765                       | L0600500.5765                       |  |  |
| 3/8                                        | 18               | L0500100.5766                       | L0600500.5766                       |  |  |
| 1/2                                        | 14               | L0500100.5767                       | L0600500.5767                       |  |  |
| 3/4                                        | 14               | L0500100.5768                       | L0600500.5768                       |  |  |
| 1"                                         | 11 1/2           | L0500100.5769                       | L0600500.5769                       |  |  |
| 1 1/4                                      | 11 1/2           | L0500100.5770                       | L0600500.5770                       |  |  |
| 1 1/2                                      | 11 1/2           | L0500100.5771                       | L0600500.5771                       |  |  |
| 2"                                         | 11 1/2           | L0500100.5772                       | L0600500.5772                       |  |  |



**NPTF**

ANSI B1.20.3

**Ausführung 3-Step  
3-Step Design**Lehrensysteem NPTF-1 nach ASME B1.20.5  
Gauge system NPTF-1 acc. ASME B1.20.5

| Nenngröße<br>Nom. size<br>Ø d <sub>1</sub> | P<br>Gg/1" (tpi) | G-GR-LD<br>(L <sub>1</sub> + L <sub>3</sub> )<br>NPTF | G-GR-LD<br>(L <sub>1</sub> )<br>NPTF | G-GR-LD<br>(L <sub>3</sub> )<br>NPTF | G-GR-LR<br>(L <sub>1</sub> )<br>NPTF |
|--------------------------------------------|------------------|-------------------------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| 1/16                                       | 27               | L0520100.5782                                         |                                      |                                      | L0600500.5782                        |
| 1/8                                        | 27               | L0520100.5783                                         |                                      |                                      | L0600500.5783                        |
| 1/4                                        | 18               | L0520100.5784                                         |                                      |                                      | L0600500.5784                        |
| 3/8                                        | 18               | L0520100.5785                                         |                                      |                                      | L0600500.5785                        |
| 1/2                                        | 14               | L0520100.5786                                         |                                      |                                      | L0600500.5786                        |
| 3/4                                        | 14               | L0520100.5787                                         |                                      |                                      | L0600500.5787                        |
| 1"                                         | 11 1/2           | L0520100.5788                                         |                                      |                                      | L0600500.5788                        |
| 1 1/4                                      | 11 1/2           |                                                       | L0500100.5789                        | L0510100.5789                        | L0600500.5789                        |
| 1 1/2                                      | 11 1/2           |                                                       | L0500100.5790                        | L0510100.5790                        | L0600500.5790                        |
| 2"                                         | 11 1/2           |                                                       | L0500100.5791                        | L0510100.5791                        | L0600500.5791                        |

> Ø 1" nur als Einzellehrdorne erhältlich (G-GR-LD (L<sub>1</sub>), G-GR-LD (L<sub>3</sub>))  
available only as separate plug gauges (G-GR-LD (L<sub>1</sub>), G-GR-LD (L<sub>3</sub>))

Gewinde-Grenzlehrringe G-GR-LR (L<sub>2</sub>) NPTF auf Anfrage  
Thread ring gauges go/no-go G-GR-LR (L<sub>2</sub>) NPTF upon request

**Lehrensysteem NPTF-2 nach ASME B1.20.5****für NPTF-Innengewinde**

- L<sub>1</sub>-Gewinde-Lehrdorn (Ausführung 4-Step)
- L<sub>3</sub>-Gewinde-Lehrdorn (Ausführung 4-Step)
- Lehrdorn Crest Check (6-Step),  
zur Prüfung der Gewindespitzen am Kerndurchmesser
- Lehrdorn Root Check (6-Step),  
zur Prüfung des Gewindegrundes am Außendurchmesser

**für NPTF-Außengewinde**

- L<sub>1</sub>-Gewinde-Lehrring (Ausführung 4-Step)
- L<sub>2</sub>-Gewinde-Lehrring (Ausführung 4-Step)
- Lehrring Crest Check (6-Step),  
zur Prüfung der Gewindespitzen am Außendurchmesser
- Lehrring Root Check (6-Step),  
zur Prüfung des Gewindegrundes am Kerndurchmesser

Gewidegrenzlehren für Lehrensysteem NPTF-2 auf Anfrage

**Gauge system NPTF-2 acc. ASME B1.20.5****for NPTF internal thread**

- L<sub>1</sub> thread plug gauge (4-step design)
- L<sub>3</sub> thread plug gauge (4-step design)
- Plug gauge Crest Check (6-step),  
for checking the thread crest on the minor diameter
- Plug gauge Root Check (6-step),  
for checking the thread root on the major diameter

**for NPTF external thread**

- L<sub>1</sub> thread ring gauge (4-step design)
- L<sub>2</sub> thread ring gauge (4-step design)
- Ring gauge Crest Check (6-step),  
for checking the thread crest on the major diameter
- Ring gauge Root Check (6-step),  
for checking the thread root on the minor diameter

Thread gauges go/no-go for gauge system NPTF-2 upon request

Product  
Finder

M

MF

UNC

UNF

Rp, R, Rc

NPT, NPTF

BSW

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Glatt

Smooth

GT, TD

Zubehör

Accessories

PoCoSys

Kalibrieren

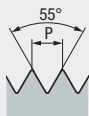
Calibration



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| <b>BSW</b>                 |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# BSW

BS 84



Lehrenmaße nach BS 919-2  
Gauge dimensions acc. BS 919-2

Toleranz · Tolerance  
Beschichtung · Coating

med.

med.

med.

med. \*)

med.

**G-GR-LD**

**G-GUT-LD**

**G-AUS-LD**

**G-GUT-LR**

**G-AUS-LR**

|            | ø d <sub>1</sub><br>inch | ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) |               |               |               |  |               |               |
|------------|--------------------------|------------------------|------------------|---------------|---------------|---------------|--|---------------|---------------|
| <b>BSW</b> | 1/8                      | 3,175                  | 40               | L0100100.3046 | L0120100.3046 | L0140100.3046 |  | L0200500.3046 | L0300500.3046 |
|            | 3/16                     | 4,763                  | 24               | L0100100.3048 | L0120100.3048 | L0140100.3048 |  | L0200500.3048 | L0300500.3048 |
|            | 1/4                      | 6,350                  | 20               | L0100100.3050 | L0120100.3050 | L0140100.3050 |  | L0200500.3050 | L0300500.3050 |
|            | 5/16                     | 7,938                  | 18               | L0100100.3051 | L0120100.3051 | L0140100.3051 |  | L0200500.3051 | L0300500.3051 |
|            | 3/8                      | 9,525                  | 16               | L0100100.3052 | L0120100.3052 | L0140100.3052 |  | L0200500.3052 | L0300500.3052 |
|            | 7/16                     | 11,113                 | 14               | L0100100.3053 | L0120100.3053 | L0140100.3053 |  | L0200500.3053 | L0300500.3053 |
|            | 1/2                      | 12,700                 | 12               | L0100100.3054 | L0120100.3054 | L0140100.3054 |  | L0200500.3054 | L0300500.3054 |
|            | 9/16                     | 14,288                 | 12               | L0100100.3055 | L0120100.3055 | L0140100.3055 |  | L0200500.3055 | L0300500.3055 |
|            | 5/8                      | 15,875                 | 11               | L0100100.3056 | L0120100.3056 | L0140100.3056 |  | L0200500.3056 | L0300500.3056 |
|            | 3/4                      | 19,050                 | 10               | L0100100.3058 | L0120100.3058 | L0140100.3058 |  | L0200500.3058 | L0300500.3058 |
|            | 7/8                      | 22,225                 | 9                | L0100100.3060 | L0120100.3060 | L0140100.3060 |  | L0200500.3060 | L0300500.3060 |
|            | 1"                       | 25,400                 | 8                | L0100100.3062 | L0120100.3062 | L0140100.3062 |  | L0200500.3062 | L0300500.3062 |
|            | 1 1/8                    | 28,575                 | 7                | L0100100.3063 | L0120100.3063 | L0140100.3063 |  | L0200500.3063 | L0300500.3063 |
|            | 1 1/4                    | 31,750                 | 7                | L0100100.3064 | L0120100.3064 | L0140100.3064 |  | L0200500.3064 | L0300500.3064 |
|            | 1 3/8                    | 34,925                 | 6                |               |               |               |  |               |               |
|            | 1 1/2                    | 38,100                 | 6                | L0100100.3066 | L0120100.3066 | L0140100.3066 |  | L0200500.3066 | L0300500.3066 |
|            | 1 3/4                    | 44,450                 | 5                |               | L0120100.3068 | L0140100.3068 |  | L0200500.3068 | L0300500.3068 |
|            | 2"                       | 50,800                 | 4 1/2            |               | L0120100.3070 | L0140100.3070 |  | L0200500.3070 | L0300500.3070 |

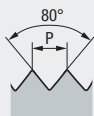
\*) ≤ 3/4 Tol. „medium class, before plating“

Gewindelehren für BSF und andere Whitworth-Gewinde auf Anfrage  
Thread gauges for BSF and other Whitworth threads upon request

> ø 1" 1/2 nur als Einzellehrdorne erhältlich (G-GUT-LD, G-AUS-LD)  
available only as separate plug gauges (G-GUT-LD, G-AUS-LD)



**Pg**  
DIN 40430



Lehrenmaße nach DIN 40431  
Gauge dimensions acc. DIN 40431



Toleranz · Tolerance  
Beschichtung · Coating

| Nenngröße<br>Nom. size<br>ø d <sub>1</sub> | ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) | G-GR-LD       | G-GUT-LD      | Glatt-AUS-LD  | G-GUT-LR      | Glatt-AUS-LR  |
|--------------------------------------------|------------------------|------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Pg</b> 7                                | 12,5                   | 20               | L0180100.4153 |               |               | L0200500.4153 | L0320500.4153 |
| 9                                          | 15,2                   | 18               | L0180100.4154 |               |               | L0200500.4154 | L0320500.4154 |
| 11                                         | 18,6                   | 18               | L0180100.4155 |               |               | L0200500.4155 | L0320500.4155 |
| 13,5                                       | 20,4                   | 18               | L0180100.4156 |               |               | L0200500.4156 | L0320500.4156 |
| 16                                         | 22,5                   | 18               | L0180100.4157 |               |               | L0200500.4157 | L0320500.4157 |
| 21                                         | 28,3                   | 16               | L0180100.4158 |               |               | L0200500.4158 | L0320500.4158 |
| 29                                         | 37                     | 16               | L0180100.4159 |               |               | L0200500.4159 | L0320500.4159 |
| 36                                         | 47                     | 16               |               | L0120100.4160 | L0190100.4160 | L0200500.4160 | L0320500.4160 |
| 42                                         | 54                     | 16               |               | L0120100.4161 | L0190100.4161 | L0200500.4161 | L0320500.4161 |
| 48                                         | 59,3                   | 16               |               | L0120100.4162 | L0190100.4162 | L0200500.4162 | L0320500.4162 |

> Pg 36 nur als Einzellehrdorne erhältlich (G-GUT-LD, G-AUS-LD)  
available only as separate plug gauges (G-GUT-LD, G-AUS-LD)

- 1) Der Ausschusslehndorn prüft nur den Innengewinde-Kerndurchmesser und ist deshalb ein glatter Lehdorn  
The no-go plug gauge checks only the minor diameter of the internal thread, and is therefore a smooth plug gauge
- 2) Der Ausschusslehrring prüft nur den Außengewinde-Außendurchmesser und ist deshalb ein glatter Lehrring  
The no-go ring gauge checks only the major diameter of the external thread, and is therefore a smooth ring gauge

| Product<br>Finder          |
|----------------------------|
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| <b>Pg</b>                  |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |



|                        |                                                                                                                                                                                                                                                                 |                                                                                                             |                                                                                                             |                                                                                                             |                                                                                    |                                                                                     |  |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
| Product Finder         | <div><div>MJ</div><div><div><div>60°</div><div>P</div></div></div><div>DIN ISO 5855</div></div> <div>Lehrenmaße nach DIN ISO 1502<br/>Gauge dimensions acc. DIN ISO 1502</div> |                             |                                                                                                             |                             |  |                                                                                     |  |
| M                      |                                                                                                                                                                                                                                                                 |                            |                                                                                                             |                                                                                                             |                                                                                    |                                                                                     |  |
| MF                     |                                                                                                                                                                                                                                                                 |                                                                                                             |                                                                                                             |                                                                                                             |                                                                                    |                                                                                     |  |
| UNC                    |                                                                                                                                                                                                                                                                 |                                                                                                             |                                                                                                             |                                                                                                             |                                                                                    |                                                                                     |  |
| UNF                    |                                                                                                                                                                                                                                                                 |                                                                                                             |                                                                                                             |                                                                                                             |                                                                                    |                                                                                     |  |
| G                      |                                                                                                                                                                                                                                                                 |                                                                                                             |                                                                                                             |                                                                                                             |                                                                                    |                                                                                     |  |
| Rp, R, Rc              |                                                                                                                                                                                                                                                                 |                                                                                                             |                                                                                                             |                                                                                                             |                                                                                    |                                                                                     |  |
| NPT, NPTF              |                                                                                                                                                                                                                                                                 |                                                                                                             |                                                                                                             |                                                                                                             |                                                                                    |                                                                                     |  |
| BSW                    |                                                                                                                                                                                                                                                                 |                                                                                                             |                                                                                                             |                                                                                                             |  |  |  |
| Pg                     |                                                                                                                                                                                                                                                                 |                                                                                                             |                                                                                                             |                                                                                                             |                                                                                    |                                                                                     |  |
| MJ                     |                                                                                                                                                                                                                                                                 |                                                                                                             |                                                                                                             |                                                                                                             |                                                                                    |                                                                                     |  |
| UNJC, UNJF             |                                                                                                                                                                                                                                                                 |                                                                                                             |                                                                                                             |                                                                                                             |                                                                                    |                                                                                     |  |
| EG (STI)               | Toleranz · Tolerance<br>Beschichtung · Coating                                                                                                                                                                                                                  | 4H                                                                                                          |                                                                                                             | 4h                                                                                                          | 4h                                                                                 |                                                                                     |  |
| SELF-LOCK              |                                                                                                                                                                                                                                                                 | G-GR-LD                                                                                                     |                                                                                                             | G-GUT-LR                                                                                                    | G-AUS-LR                                                                           |                                                                                     |  |
| Tr, Tr-F<br>Rd         | <div><div>ø d<sub>1</sub><br/>mm</div><div>P<br/>mm</div></div>                                                                                                                                                                                                 |                                                                                                             |                                                                                                             |                                                                                                             |                                                                                    |                                                                                     |  |
| Glatt<br>Smooth        | <div><div>M</div><div><div>3</div><div>x</div><div>0,5</div></div><div><div>4</div><div>x</div><div>0,7</div></div><div><div>5</div><div>x</div><div>0,8</div></div><div><div>6</div><div>x</div><div>1</div></div></div>                                       | <div><div>L0100110.1229</div><div>L0100110.1231</div><div>L0100110.1232</div><div>L0100110.1233</div></div> | <div><div>L0200510.1229</div><div>L0200510.1231</div><div>L0200510.1232</div><div>L0200510.1233</div></div> | <div><div>L0300510.1229</div><div>L0300510.1231</div><div>L0300510.1232</div><div>L0300510.1233</div></div> |                                                                                    |                                                                                     |  |
| GT, TD                 | <div><div>8</div><div>x</div><div>1</div></div> <div><div>10</div><div>x</div><div>1,25</div></div>                                                                                                                                                             | <div><div>L0100110.1235</div><div>L0100110.1236</div></div>                                                 | <div><div>L0200510.1235</div><div>L0200510.1236</div></div>                                                 | <div><div>L0300510.1235</div><div>L0300510.1236</div></div>                                                 |                                                                                    |                                                                                     |  |
| Zubehör<br>Accessories |                                                                                                                                                                                                                                                                 |                                                                                                             |                                                                                                             |                                                                                                             |                                                                                    |                                                                                     |  |

### Toleranzangaben nach DIN ISO 5855

Bei der Toleranzangabe des Innengewindes von 4H5H (bis MJ 5x0,8 von 4H6H) und des Außengewindes von 4h6h steht als erstes die Toleranzklasse des Flankendurchmessers, gefolgt von der Toleranzklasse des Kerndurchmessers (Innengewinde) oder des Außendurchmessers (Außengewinde).

Am **Innengewinde** beträgt die Flankendurchmesser-Toleranz 4H und die Kerndurchmesser-Toleranz 5H (bzw. 6H). Die Kerndurchmesser-Toleranz wird durch den Gewindelehrdorn nicht erfasst und deshalb nicht angegeben.

Am **Außengewinde** beträgt die Flankendurchmesser-Toleranz 4h und die Außendurchmesser-Toleranz 6h. Die Außendurchmesser-Toleranz wird durch den Gewindelehrring nicht erfasst und deshalb nicht angegeben.

### Tolerance specifications according to DIN ISO 5855

The tolerance specification of 4H5H (up to MJ 5x0.8 of 4H6H) for the internal thread and 4h6h for the external thread indicates in the first digits the tolerance class of the pitch diameter, followed by the tolerance class of the minor diameter (internal thread) or the major diameter (external thread).

The tolerance of the pitch diameter of the **internal thread** is 4H and the tolerance of the minor diameter is 5H (respectively 6H).

The tolerance of the minor diameter is not checked by the thread plug gauge and therefore not indicated.

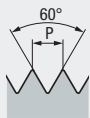
The tolerance of the pitch diameter of the **external thread** is 4h and the tolerance of the major diameter is 6h.

The tolerance of the major diameter is not checked by the thread ring gauge and therefore not indicated.



**UNJC**

ASME B1.1 - 2019



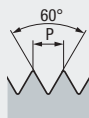
Lehrenmaße nach ANSI/ASME B1.2  
Gauge dimensions acc. ANSI/ASME B1.2

Toleranz · Tolerance  
Beschichtung · Coating

|                  |        |                  | G-GR-LD       | G-GUT-LR      | G-AUS-LR      |  |  |
|------------------|--------|------------------|---------------|---------------|---------------|--|--|
| ø d <sub>1</sub> | inch   | P<br>Gg/1" (tpi) |               |               |               |  |  |
| Nr. 4            | 0.1120 | 40               | L0100110.5479 | L0200510.5479 | L0300510.5479 |  |  |
| Nr. 6            | 0.1380 | 32               | L0100110.5481 | L0200510.5481 | L0300510.5481 |  |  |
| Nr. 8            | 0.1640 | 32               | L0100110.5482 | L0200510.5482 | L0300510.5482 |  |  |
| Nr. 10           | 0.1900 | 24               | L0100110.5483 | L0200510.5483 | L0300510.5483 |  |  |
| 1/4              | 0.2500 | 20               | L0100110.5485 | L0200510.5485 | L0300510.5485 |  |  |
| 5/16             | 0.3125 | 18               | L0100110.5486 | L0200510.5486 | L0300510.5486 |  |  |
| 3/8              | 0.3750 | 16               | L0100110.5487 | L0200510.5487 | L0300510.5487 |  |  |

**UNJF**

ASME B1.1 - 2019



Lehrenmaße nach ANSI/ASME B1.2  
Gauge dimensions acc. ANSI/ASME B1.2

Toleranz · Tolerance  
Beschichtung · Coating

|                  |        |                  | G-GR-LD       | G-GUT-LR      | G-AUS-LR      |  |  |
|------------------|--------|------------------|---------------|---------------|---------------|--|--|
| ø d <sub>1</sub> | inch   | P<br>Gg/1" (tpi) |               |               |               |  |  |
| Nr. 4            | 0.1120 | 48               | L0100110.5505 | L0200510.5505 | L0300510.5505 |  |  |
| Nr. 6            | 0.1380 | 40               | L0100110.5507 | L0200510.5507 | L0300510.5507 |  |  |
| Nr. 8            | 0.1640 | 36               | L0100110.5508 | L0200510.5508 | L0300510.5508 |  |  |
| Nr. 10           | 0.1900 | 32               | L0100110.5509 | L0200510.5509 | L0300510.5509 |  |  |
| 1/4              | 0.2500 | 28               | L0100110.5511 | L0200510.5511 | L0300510.5511 |  |  |
| 5/16             | 0.3125 | 24               | L0100110.5512 | L0200510.5512 | L0300510.5512 |  |  |
| 3/8              | 0.3750 | 24               | L0100110.5513 | L0200510.5513 | L0300510.5513 |  |  |

Product  
Finder

M

MF

UNC

UNF

Rp, R, Rc

NPT, NPTF

BSW

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
Rd

Glatt  
Smooth

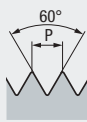
GT, TD

Zubehör  
Accessories

PoCoSys

Kalibrieren  
Calibration



| Product Finder             |  <b>EG M (STI)</b><br>DIN 8140-2 <div>    </div> |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| M                          |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| MF                         |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| UNC                        |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| UNF                        |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| G                          |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| Rp, R, Rc                  |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| NPT, NPTF                  |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| BSW                        |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| Pg                         |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| MJ<br>UNJC, UNJF           | Lehrenmaße nach DIN ISO 1502<br>Gauge dimensions acc. DIN ISO 1502                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| EG (STI)                   | Toleranz · Tolerance<br>Beschichtung · Coating                                                                                                                                                                                                                                                                                                                                    | 6H mod.                                                                                                                                                                                                                                                                                                              |  |  |  |  |
| SELF-LOCK                  |                                                                                                                                                                                                                                                                                                                                                                                   | G-GR-LD                                                                                                                                                                                                                                                                                                              |  |  |  |  |
| Tr, Tr-F<br>Rd             | Nenngröße<br>Nom. size<br>Ø d <sub>1</sub> P<br>mm                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| Glatt<br>Smooth            | <b>EG M</b> 2,5    0,45<br>3     0,5<br>3,5   0,6<br>4     0,7<br>5     0,8<br>6     1<br>8    1,25<br>10    1,5<br>12    1,75<br>14    2<br>16    2<br>18    2,5<br>20    2,5                                                                                                                                                                                                    | <b>L0100100.0965</b><br><b>L0100100.0966</b><br><b>L0100100.0967</b><br><b>L0100100.0968</b><br><b>L0100100.0970</b><br><b>L0100100.0971</b><br><b>L0100100.0973</b><br><b>L0100100.0975</b><br><b>L0100100.0977</b><br><b>L0100100.0978</b><br><b>L0100100.0979</b><br><b>L0100100.0980</b><br><b>L0100100.0981</b> |  |  |  |  |
| GT, TD                     |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| Zubehör<br>Accessories     |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| PoCoSys                    |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| Kalibrieren<br>Calibration |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                      |  |  |  |  |

EG-Gewindelehren für Metrisches ISO-Feingewinde, UNC und UNF auf Anfrage  
STI (EG) thread gauges for ISO Metric fine thread, UNC and UNF thread upon request





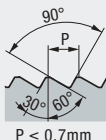
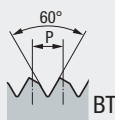
Gewindebohrer für Metrisches  
EG-Gewinde siehe Seite 280 - 283

Taps for Metric STI thread,  
see page 280 - 283



**LK-M**

EMUGE-Norm · EMUGE Standard



Lehrenmaße nach EMUGE-Norm

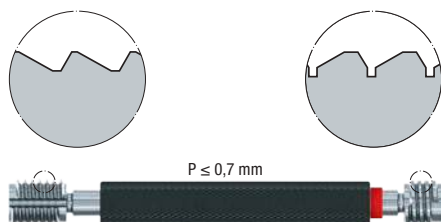
Gauge dimensions acc. EMUGE standard

|             | $\varnothing d_1$<br>mm | P<br>mm | G-GR-LD       |  |  |  |  |
|-------------|-------------------------|---------|---------------|--|--|--|--|
| <b>LK-M</b> | 3                       | 0,5     | L0100100.1046 |  |  |  |  |
|             | 4                       | 0,7     | L0100100.1048 |  |  |  |  |
|             | 5                       | 0,8     | L0100100.1050 |  |  |  |  |
|             | 6                       | 1       | L0100100.1052 |  |  |  |  |
|             | 8                       | 1,25    | L0100100.1054 |  |  |  |  |
|             | 10                      | 1,5     | L0100100.1056 |  |  |  |  |
|             | 12                      | 1,75    | L0100100.1058 |  |  |  |  |
|             | 14                      | 2       | L0100100.1059 |  |  |  |  |
|             | 16                      | 2       | L0100100.1060 |  |  |  |  |
|             | 20                      | 2,5     | L0100100.1062 |  |  |  |  |
|             | 24                      | 3       | L0100100.1064 |  |  |  |  |

### Die Lehrung des EMUGE SELF-LOCK-Gewindes

Wir empfehlen unser zweiteiliges Lehrensystme, das der gängigen Praxis der Gut- und Ausschusslehre entspricht und vollkommen für die Gewindeprüfung ausreicht, wenn sichergestellt ist, dass das LK-Gewinde mit unseren profilgetreuen Gewindebohrern hergestellt wird.

Es gibt keine allgemein gültige Norm (z.B. DIN-Norm) über das EMUGE SELF-LOCK-Gewinde. Andere Werkzeughersteller könnten daher mit anderen Gewinde-Grenzmaßen arbeiten. Daher empfehlen wir, EMUGE SELF-LOCK-Gewinde ausschließlich mit EMUGE SELF-LOCK-Gewindelehren zu prüfen.

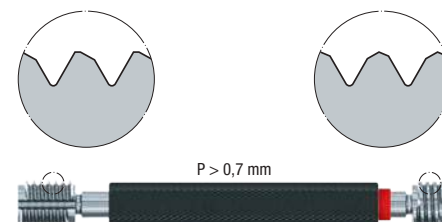


Die Lehrung des Sägezahn-Profils beruht auf dem gleichen Prinzip, jedoch ist bei Gut- und Ausschusslehren auf die richtige Einschraubseite zu achten.

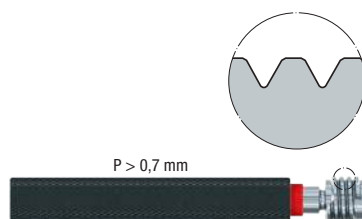
### The gauging of the EMUGE SELF-LOCK thread

We recommend using our two-piece gauge system which corresponds to the usual combination of go and no-go gauge and is perfectly sufficient for the gauging of the thread, provided that the LK threads were produced with our true-to-profile EMUGE taps.

There is no generally applicable standard (e.g. DIN standard) for the EMUGE SELF-LOCK thread, so other manufacturers may use different limit sizes for their threads. For this reason, we recommend gauging EMUGE SELF-LOCK threads exclusively with EMUGE SELF-LOCK gauges.



The gauging of the saw-tooth profile works on the same principle, with the only difference that both the go and the no-go plug gauge have to be used in the correct direction.



Werden Strehler oder Gewindefräser eingesetzt, empfehlen wir die zusätzliche Verwendung der EMUGE HRPG-Lehre. Diese prüft den unteren Rampenpunkt bzw. eventuelle Rampenwinkelfehler.

If chasers or thread milling cutters are used, we recommend using an additional EMUGE HRPG gauge. This gauge serves to check the lower ramp point or possible ramp angle errors.

Product

Finder

M

MF

UNC

UNF

Rp, R, Rc

NPT, NPTF

BSW

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

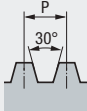
Tr, Tr-F  
RdGlatt  
Smooth

GT, TD

Zubehör  
Accessories

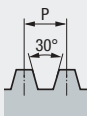
PoCoSys

Kalibrieren  
Calibration

|                            |                                                                                                                                        |   |         |  |  |  |  |                                                                                     |                                                                                     |                                                                                  |  |                                                                                    |                                                                                    |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---|---------|--|--|--|--|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Product Finder             | <div><div>Tr</div><div></div><div>DIN 103</div></div> |   |         |  |  |  |  |     |     |  |  |  |  |
| M                          |                                                                                                                                        |   |         |  |  |  |  |                                                                                     |                                                                                     |                                                                                  |  |                                                                                    |                                                                                    |
| MF                         |                                                                                                                                        |   |         |  |  |  |  |                                                                                     |                                                                                     |                                                                                  |  |                                                                                    |                                                                                    |
| UNC                        |                                                                                                                                        |   |         |  |  |  |  |                                                                                     |                                                                                     |                                                                                  |  |                                                                                    |                                                                                    |
| UNF                        |                                                                                                                                        |   |         |  |  |  |  |                                                                                     |                                                                                     |                                                                                  |  |                                                                                    |                                                                                    |
| G                          |                                                                                                                                        |   |         |  |  |  |  |                                                                                     |                                                                                     |                                                                                  |  |                                                                                    |                                                                                    |
| Rp, R, Rc                  |                                                                                                                                        |   |         |  |  |  |  |                                                                                     |                                                                                     |                                                                                  |  |                                                                                    |                                                                                    |
| NPT, NPTF                  |                                                                                                                                        |   |         |  |  |  |  |                                                                                     |                                                                                     |                                                                                  |  |                                                                                    |                                                                                    |
| BSW                        |                                                                                                                                        |   |         |  |  |  |  |                                                                                     |                                                                                     |                                                                                  |  |                                                                                    |                                                                                    |
| Pg                         | <div>Lehrenmaße nach DIN 103-9<br/>Gauge dimensions acc. DIN 103-9</div>                                                               |   |         |  |  |  |  |                                                                                     |                                                                                     |                                                                                  |  |                                                                                    |                                                                                    |
| MJ<br>UNJC, UNJF           |                                                                                                                                        |   |         |  |  |  |  |  |  |                                                                                  |  |                                                                                    |                                                                                    |
| EG (STI)                   | <div>Toleranz · Tolerance<br/>Beschichtung · Coating</div>                                                                             |   |         |  |  |  |  | 7H                                                                                  | 7H                                                                                  | 7H                                                                               |  | 7e                                                                                 | 7e                                                                                 |
| SELF-LOCK                  |                                                                                                                                        |   |         |  |  |  |  |                                                                                     |                                                                                     |                                                                                  |  |                                                                                    |                                                                                    |
| Tr, Tr-F<br>Rd             |                                                                                                                                        |   |         |  |  |  |  | G-GR-LD                                                                             | G-GUT-LD                                                                            | G-AUS-LD                                                                         |  | G-GUT-LR                                                                           | G-AUS-LR                                                                           |
| Glatt<br>Smooth            | ø d <sub>1</sub><br>mm                                                                                                                 |   | P<br>mm |  |  |  |  | L0100100.7040                                                                       | L0120100.7040                                                                       | L0140100.7040                                                                    |  | L0200500.7040                                                                      | L0300500.7040                                                                      |
|                            | 8                                                                                                                                      | x | 1,5     |  |  |  |  | L0100100.7042                                                                       | L0120100.7042                                                                       | L0140100.7042                                                                    |  | L0200500.7042                                                                      | L0300500.7042                                                                      |
|                            | 9                                                                                                                                      | x | 2       |  |  |  |  | L0100100.7043                                                                       | L0120100.7043                                                                       | L0140100.7043                                                                    |  | L0200500.7043                                                                      | L0300500.7043                                                                      |
| GT, TD                     | 10                                                                                                                                     | x | 2       |  |  |  |  | L0100100.7044                                                                       | L0120100.7044                                                                       | L0140100.7044                                                                    |  | L0200500.7044                                                                      | L0300500.7044                                                                      |
|                            | 10                                                                                                                                     | x | 3       |  |  |  |  | L0100100.7045                                                                       | L0120100.7045                                                                       | L0140100.7045                                                                    |  | L0200500.7045                                                                      | L0300500.7045                                                                      |
|                            | 11                                                                                                                                     | x | 3       |  |  |  |  | L0100100.7046                                                                       | L0120100.7046                                                                       | L0140100.7046                                                                    |  | L0200500.7046                                                                      | L0300500.7046                                                                      |
| Zubehör<br>Accessories     | 12                                                                                                                                     | x | 3       |  |  |  |  | L0100100.7047                                                                       | L0120100.7047                                                                       | L0140100.7047                                                                    |  | L0200500.7047                                                                      | L0300500.7047                                                                      |
|                            | 14                                                                                                                                     | x | 3       |  |  |  |  | L0100100.7048                                                                       | L0120100.7048                                                                       | L0140100.7048                                                                    |  | L0200500.7048                                                                      | L0300500.7048                                                                      |
|                            | 14                                                                                                                                     | x | 4       |  |  |  |  | L0100100.7051                                                                       | L0120100.7051                                                                       | L0140100.7051                                                                    |  | L0200500.7051                                                                      | L0300500.7051                                                                      |
| PoCoSys                    | 16                                                                                                                                     | x | 4       |  |  |  |  | L0100100.7052                                                                       | L0120100.7052                                                                       | L0140100.7052                                                                    |  | L0200500.7052                                                                      | L0300500.7052                                                                      |
|                            | 18                                                                                                                                     | x | 4       |  |  |  |  | L0100100.7053                                                                       | L0120100.7053                                                                       | L0140100.7053                                                                    |  | L0200500.7053                                                                      | L0300500.7053                                                                      |
|                            | 20                                                                                                                                     | x | 4       |  |  |  |  | L0100100.7054                                                                       | L0120100.7054                                                                       | L0140100.7054                                                                    |  | L0200500.7054                                                                      | L0300500.7054                                                                      |
| Kalibrieren<br>Calibration | 22                                                                                                                                     | x | 5       |  |  |  |  | L0100100.7055                                                                       | L0120100.7055                                                                       | L0140100.7055                                                                    |  | L0200500.7055                                                                      | L0300500.7055                                                                      |
|                            | 24                                                                                                                                     | x | 5       |  |  |  |  | L0100100.7057                                                                       | L0120100.7057                                                                       | L0140100.7057                                                                    |  | L0200500.7057                                                                      | L0300500.7057                                                                      |
|                            | 26                                                                                                                                     | x | 5       |  |  |  |  | L0100100.7058                                                                       | L0120100.7058                                                                       | L0140100.7058                                                                    |  | L0200500.7058                                                                      | L0300500.7058                                                                      |
|                            | 28                                                                                                                                     | x | 5       |  |  |  |  | L0100100.7059                                                                       | L0120100.7059                                                                       | L0140100.7059                                                                    |  | L0200500.7059                                                                      | L0300500.7059                                                                      |
|                            | 30                                                                                                                                     | x | 6       |  |  |  |  | L0100100.7060                                                                       | L0120100.7060                                                                       | L0140100.7060                                                                    |  | L0200500.7060                                                                      | L0300500.7060                                                                      |
|                            | 32                                                                                                                                     | x | 6       |  |  |  |  | L0100100.7061                                                                       | L0120100.7061                                                                       | L0140100.7061                                                                    |  | L0200500.7061                                                                      | L0300500.7061                                                                      |
|                            | 34                                                                                                                                     | x | 6       |  |  |  |  | L0100100.7062                                                                       | L0120100.7062                                                                       | L0140100.7062                                                                    |  | L0200500.7062                                                                      | L0300500.7062                                                                      |
|                            | 36                                                                                                                                     | x | 6       |  |  |  |  | L0100100.7063                                                                       | L0120100.7063                                                                       | L0140100.7063                                                                    |  | L0200500.7063                                                                      | L0300500.7063                                                                      |
|                            | 38                                                                                                                                     | x | 7       |  |  |  |  | L0100100.7064                                                                       | L0120100.7064                                                                       | L0140100.7064                                                                    |  | L0200500.7064                                                                      | L0300500.7064                                                                      |
|                            | 40                                                                                                                                     | x | 7       |  |  |  |  |                                                                                     | L0120100.7065                                                                       | L0140100.7065                                                                    |  | L0200500.7065                                                                      | L0300500.7065                                                                      |
|                            | 42                                                                                                                                     | x | 7       |  |  |  |  |                                                                                     | L0120100.7066                                                                       | L0140100.7066                                                                    |  | L0200500.7066                                                                      | L0300500.7066                                                                      |
|                            | 44                                                                                                                                     | x | 7       |  |  |  |  |                                                                                     | L0120100.7067                                                                       | L0140100.7067                                                                    |  | L0200500.7067                                                                      | L0300500.7067                                                                      |
|                            | 46                                                                                                                                     | x | 8       |  |  |  |  |                                                                                     | L0120100.7068                                                                       | L0140100.7068                                                                    |  | L0200500.7068                                                                      | L0300500.7068                                                                      |
|                            | 48                                                                                                                                     | x | 8       |  |  |  |  |                                                                                     | L0120100.7069                                                                       | L0140100.7069                                                                    |  | L0200500.7069                                                                      | L0300500.7069                                                                      |
|                            | 50                                                                                                                                     | x | 8       |  |  |  |  |                                                                                     | L0120100.7070                                                                       | L0140100.7070                                                                    |  | L0200500.7070                                                                      | L0300500.7070                                                                      |
| 52                         | x                                                                                                                                      | 8 |         |  |  |  |  |                                                                                     |                                                                                     |                                                                                  |  |                                                                                    |                                                                                    |

**Tr-F**

DIN 103



Lehrenmaße nach DIN 103-9  
Gauge dimensions acc. DIN 103-9

Toleranz · Tolerance  
Beschichtung · Coating

|    |                        |   |         | 7H            |  | 7H            |  | 7H            |  | 7e            |  |
|----|------------------------|---|---------|---------------|--|---------------|--|---------------|--|---------------|--|
|    |                        |   |         | G-GR-LD       |  | G-GUT-LD      |  | G-AUS-LD      |  | G-GUT-LR      |  |
| Tr | ø d <sub>1</sub><br>mm | x | P<br>mm |               |  |               |  |               |  |               |  |
|    | 9                      | x | 1,5     | L0100100.7111 |  | L0120100.7111 |  | L0140100.7111 |  | L0200500.7111 |  |
|    | 10                     | x | 1,5     | L0100100.7112 |  | L0120100.7112 |  | L0140100.7112 |  | L0200500.7112 |  |
|    | 11                     | x | 2       | L0100100.7128 |  | L0120100.7128 |  | L0140100.7128 |  | L0200500.7128 |  |
|    | 12                     | x | 2       | L0100100.7129 |  | L0120100.7129 |  | L0140100.7129 |  | L0200500.7129 |  |
|    | 14                     | x | 2       | L0100100.7130 |  | L0120100.7130 |  | L0140100.7130 |  | L0200500.7130 |  |
|    | 16                     | x | 2       | L0100100.7132 |  | L0120100.7132 |  | L0140100.7132 |  | L0200500.7132 |  |
|    | 18                     | x | 2       | L0100100.7133 |  | L0120100.7133 |  | L0140100.7133 |  | L0200500.7133 |  |
|    | 20                     | x | 2       | L0100100.7134 |  | L0120100.7134 |  | L0140100.7134 |  | L0200500.7134 |  |
|    | 22                     | x | 3       | L0100100.7156 |  | L0120100.7156 |  | L0140100.7156 |  | L0200500.7156 |  |
|    | 24                     | x | 3       | L0100100.7157 |  | L0120100.7157 |  | L0140100.7157 |  | L0200500.7157 |  |
|    | 26                     | x | 3       | L0100100.7159 |  | L0120100.7159 |  | L0140100.7159 |  | L0200500.7159 |  |
|    | 28                     | x | 3       | L0100100.7160 |  | L0120100.7160 |  | L0140100.7160 |  | L0200500.7160 |  |
|    | 30                     | x | 3       | L0100100.7161 |  | L0120100.7161 |  | L0140100.7161 |  | L0200500.7161 |  |

|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
|                            |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ                         |
| UNJC, UNJF                 |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |



Gewindebohrer für Trapez-Gewinde  
siehe Seite 294 - 298

Taps for trapezoidal threads,  
see page 294 - 298



| Product Finder         |  <p><b>Rd</b><br/>DIN 405</p> <p>Lehrenmaße nach DIN 405-3<br/>Gauge dimensions acc. DIN 405-3</p> |  |  |  |  |  |  |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| M                      |                                                                                                                                                                                     |  |  |  |  |                                                                                     |                                                                                     |
| MF                     |                                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |
| UNC                    |                                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |
| UNF                    |                                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |
| G                      |                                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |
| Rp, R, Rc              |                                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |
| NPT, NPTF              |                                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| BSW                    |                                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |
| Pg                     |                                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |
| MJ<br>UNJC, UNJF       |                                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |
| EG (STI)               | Toleranz · Tolerance<br>Beschichtung · Coating                                                                                                                                      | 7H                                                                                | 7H                                                                                | 7H                                                                                |  | 7h <sup>1)</sup>                                                                    | 7h <sup>1)</sup>                                                                    |
| SELF-LOCK              |                                                                                                                                                                                     | <b>G-GR-LD</b>                                                                    | <b>G-GUT-LD</b>                                                                   | <b>G-AUS-LD</b>                                                                   |  | <b>G-GUT-LR</b>                                                                     | <b>G-AUS-LR</b>                                                                     |
| Tr, Tr-F<br>Rd         | <div> <div> <div>ø d<sub>1</sub><br/>mm</div> <div>P<br/>Gg/1" (tpi)</div> </div> </div>                                                                                            |                                                                                   |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |
| <b>Rd</b>              |                                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |
|                        | 8 x 10                                                                                                                                                                              | L0100200.7287                                                                     | L0120200.7287                                                                     | L0140200.7287                                                                     |  | L0200600.7287                                                                       | L0300600.7287                                                                       |
|                        | 9 x 10                                                                                                                                                                              | L0100200.7288                                                                     | L0120200.7288                                                                     | L0140200.7288                                                                     |  | L0200600.7288                                                                       | L0300600.7288                                                                       |
| Glatt<br>Smooth        | 10 x 10                                                                                                                                                                             | L0100200.7289                                                                     | L0120200.7289                                                                     | L0140200.7289                                                                     |  | L0200600.7289                                                                       | L0300600.7289                                                                       |
|                        | 11 x 10                                                                                                                                                                             | L0100200.7290                                                                     | L0120200.7290                                                                     | L0140200.7290                                                                     |  | L0200600.7290                                                                       | L0300600.7290                                                                       |
| GT, TD                 | 12 x 10                                                                                                                                                                             | L0100200.7291                                                                     | L0120200.7291                                                                     | L0140200.7291                                                                     |  | L0200600.7291                                                                       | L0300600.7291                                                                       |
|                        | 14 x 8                                                                                                                                                                              | L0100200.7293                                                                     | L0120200.7293                                                                     | L0140200.7293                                                                     |  | L0200600.7293                                                                       | L0300600.7293                                                                       |
| Zubehör<br>Accessories | 16 x 8                                                                                                                                                                              | L0100200.7294                                                                     | L0120200.7294                                                                     | L0140200.7294                                                                     |  | L0200600.7294                                                                       | L0300600.7294                                                                       |
|                        | 18 x 8                                                                                                                                                                              | L0100200.7295                                                                     | L0120200.7295                                                                     | L0140200.7295                                                                     |  | L0200600.7295                                                                       | L0300600.7295                                                                       |
| PoCoSys                | 20 x 8                                                                                                                                                                              | L0100200.7296                                                                     | L0120200.7296                                                                     | L0140200.7296                                                                     |  | L0200600.7296                                                                       | L0300600.7296                                                                       |

<sup>1)</sup> Toleranz 7e auf Anfrage  
Tolerance 7e upon request



| Lehrenmaße nach DIN EN ISO 1938-1<br>Gauge dimensions acc. DIN EN ISO 1938-1 |   |   |   |  |  |  |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|--|
|                                                                              |  |  |  |  |  |  |
|                                                                              | H7                                                                                | H7                                                                                | H7                                                                                |  |  |  |
|                                                                              | Glatt-GR-LD<br>DIN 2245<br>Form Z                                                 | Glatt-GUT-LD<br>DIN 2246<br>Form ZG                                               | Glatt-AUS-LD<br>DIN 2247<br>Form ZA                                               |  |  |  |
| Nenndurchmesser<br>Nominal diameter                                          |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| 3                                                                            | L14000H7.0030                                                                     |                                                                                   |                                                                                   |  |  |  |
| 3,5                                                                          | L14000H7.0035                                                                     |                                                                                   |                                                                                   |  |  |  |
| 4                                                                            | L14000H7.0040                                                                     |                                                                                   |                                                                                   |  |  |  |
| 4,5                                                                          | L14000H7.0045                                                                     |                                                                                   |                                                                                   |  |  |  |
| 5                                                                            | L14000H7.0050                                                                     |                                                                                   |                                                                                   |  |  |  |
| 5,5                                                                          | L14000H7.0055                                                                     |                                                                                   |                                                                                   |  |  |  |
| 6                                                                            | L14000H7.0060                                                                     |                                                                                   |                                                                                   |  |  |  |
| 7                                                                            | L14000H7.0070                                                                     |                                                                                   |                                                                                   |  |  |  |
| 8                                                                            | L14000H7.0080                                                                     |                                                                                   |                                                                                   |  |  |  |
| 9                                                                            | L14000H7.0090                                                                     |                                                                                   |                                                                                   |  |  |  |
| 10                                                                           | L14000H7.0100                                                                     |                                                                                   |                                                                                   |  |  |  |
| 11                                                                           | L14000H7.0110                                                                     |                                                                                   |                                                                                   |  |  |  |
| 12                                                                           | L14000H7.0120                                                                     |                                                                                   |                                                                                   |  |  |  |
| 13                                                                           | L14000H7.0130                                                                     |                                                                                   |                                                                                   |  |  |  |
| 14                                                                           | L14000H7.0140                                                                     |                                                                                   |                                                                                   |  |  |  |
| 15                                                                           | L14000H7.0150                                                                     |                                                                                   |                                                                                   |  |  |  |
| 16                                                                           | L14000H7.0160                                                                     |                                                                                   |                                                                                   |  |  |  |
| 17                                                                           | L14000H7.0170                                                                     |                                                                                   |                                                                                   |  |  |  |
| 18                                                                           | L14000H7.0180                                                                     |                                                                                   |                                                                                   |  |  |  |
| 19                                                                           | L14000H7.0190                                                                     |                                                                                   |                                                                                   |  |  |  |
| 20                                                                           | L14000H7.0200                                                                     |                                                                                   |                                                                                   |  |  |  |
| 21                                                                           | L14000H7.0210                                                                     |                                                                                   |                                                                                   |  |  |  |
| 22                                                                           | L14000H7.0220                                                                     |                                                                                   |                                                                                   |  |  |  |
| 23                                                                           | L14000H7.0230                                                                     |                                                                                   |                                                                                   |  |  |  |
| 24                                                                           | L14000H7.0240                                                                     |                                                                                   |                                                                                   |  |  |  |
| 25                                                                           | L14000H7.0250                                                                     |                                                                                   |                                                                                   |  |  |  |
| 26                                                                           | L14000H7.0260                                                                     |                                                                                   |                                                                                   |  |  |  |
| 27                                                                           | L14000H7.0270                                                                     |                                                                                   |                                                                                   |  |  |  |
| 28                                                                           | L14000H7.0280                                                                     |                                                                                   |                                                                                   |  |  |  |
| 30                                                                           | L14000H7.0300                                                                     |                                                                                   |                                                                                   |  |  |  |
| 32                                                                           | L14000H7.0320                                                                     |                                                                                   |                                                                                   |  |  |  |
| 33                                                                           | L14000H7.0330                                                                     |                                                                                   |                                                                                   |  |  |  |
| 34                                                                           | L14000H7.0340                                                                     |                                                                                   |                                                                                   |  |  |  |
| 35                                                                           | L14000H7.0350                                                                     |                                                                                   |                                                                                   |  |  |  |
| 36                                                                           | L14000H7.0360                                                                     |                                                                                   |                                                                                   |  |  |  |
| 37                                                                           | L14000H7.0370                                                                     |                                                                                   |                                                                                   |  |  |  |
| 40                                                                           | L14000H7.0400                                                                     |                                                                                   |                                                                                   |  |  |  |
| 44                                                                           | L14000H7.0440                                                                     |                                                                                   |                                                                                   |  |  |  |
| 45                                                                           | L14000H7.0450                                                                     |                                                                                   |                                                                                   |  |  |  |
| 46                                                                           | L14000H7.0460                                                                     |                                                                                   |                                                                                   |  |  |  |
| 47                                                                           | L14000H7.0470                                                                     |                                                                                   |                                                                                   |  |  |  |
| 48                                                                           | L14000H7.0480                                                                     |                                                                                   |                                                                                   |  |  |  |
| 50                                                                           | L14000H7.0500                                                                     |                                                                                   |                                                                                   |  |  |  |
| 52                                                                           | L14000H7.0520                                                                     |                                                                                   |                                                                                   |  |  |  |
| 55                                                                           | L14000H7.0550                                                                     |                                                                                   |                                                                                   |  |  |  |
| 58                                                                           | L14000H7.0580                                                                     |                                                                                   |                                                                                   |  |  |  |
| 60                                                                           | L14000H7.0600                                                                     |                                                                                   |                                                                                   |  |  |  |
| 62                                                                           | L14000H7.0620                                                                     |                                                                                   |                                                                                   |  |  |  |
| 65                                                                           | L14000H7.0650                                                                     |                                                                                   |                                                                                   |  |  |  |
| 68                                                                           |                                                                                   | L14200H7.0680                                                                     | L14400H7.0680                                                                     |  |  |  |
| 70                                                                           |                                                                                   | L14200H7.0700                                                                     | L14400H7.0700                                                                     |  |  |  |
| 72                                                                           |                                                                                   | L14200H7.0720                                                                     | L14400H7.0720                                                                     |  |  |  |
| 75                                                                           |                                                                                   | L14200H7.0750                                                                     | L14400H7.0750                                                                     |  |  |  |
| 78                                                                           |                                                                                   | L14200H7.0780                                                                     | L14400H7.0780                                                                     |  |  |  |
| 80                                                                           |                                                                                   | L14200H7.0800                                                                     | L14400H7.0800                                                                     |  |  |  |

> ø 65 nur als Einzellehrdorne erhältlich (GUT-LD, AUS-LD)  
available only as separate plug gauges (GUT-LD, AUS-LD)

Weitere Toleranzen nach DIN EN ISO 286-2 auf Anfrage herstellbar.  
Further tolerances according to DIN ISO 286-2 can be produced upon request.

Product  
Finder

M

MF

UNC

UNF

J

Rp, R, Rc

NPT, NPTF

BSW

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F

Rd

Glatt

Smooth

GT, TD

Zubehör

Accessories

PoCoSys

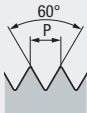
Kalibrieren

Calibration



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# M



DIN 13

**Für geschnittene Gewinde**  
For cut threads

Lehrenmaße nach DIN ISO 1502  
Gauge dimensions acc. DIN ISO 1502

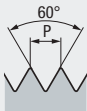


Toleranz · Tolerance

6H

| Metrische Gewinde<br>Metric threads | Innengewinde-Kerndurchmesser<br>Minor dia. of the internal thread |        | Glatt-GR-LD |                      |
|-------------------------------------|-------------------------------------------------------------------|--------|-------------|----------------------|
|                                     | min.                                                              | max.   |             |                      |
| <b>M</b>                            | 3                                                                 | 2,459  | 2,599       | <b>L0160100.0030</b> |
|                                     | 4                                                                 | 3,242  | 3,422       | <b>L0160100.0040</b> |
|                                     | 5                                                                 | 4,134  | 4,334       | <b>L0160100.0050</b> |
|                                     | 6                                                                 | 4,917  | 5,153       | <b>L0160100.0060</b> |
|                                     | 7                                                                 | 5,917  | 6,153       | <b>L0160100.0070</b> |
|                                     | 8                                                                 | 6,647  | 6,912       | <b>L0160100.0080</b> |
|                                     | 10                                                                | 8,376  | 8,676       | <b>L0160100.0100</b> |
|                                     | 12                                                                | 10,106 | 10,441      | <b>L0160100.0112</b> |
|                                     | 16                                                                | 13,835 | 14,210      | <b>L0160100.0116</b> |

# M



DIN 13

**Für geformte Gewinde**  
For cold-formed threads

Lehrenmaße nach DIN ISO 1502  
Gauge dimensions acc. DIN ISO 1502



Toleranz · Tolerance

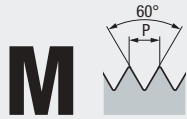
7H

| Metrische Gewinde<br>Metric threads | Innengewinde-Kerndurchmesser<br>Minor dia. of the internal thread |        | Glatt-GR-LD |                      |
|-------------------------------------|-------------------------------------------------------------------|--------|-------------|----------------------|
|                                     | min.                                                              | max.   |             |                      |
| <b>M</b>                            | 3                                                                 | 2,459  | 2,639       | <b>L0160105.0030</b> |
|                                     | 4                                                                 | 3,242  | 3,466       | <b>L0160105.0040</b> |
|                                     | 5                                                                 | 4,134  | 4,384       | <b>L0160105.0050</b> |
|                                     | 6                                                                 | 4,917  | 5,217       | <b>L0160105.0060</b> |
|                                     | 7                                                                 | 5,917  | 6,217       | <b>L0160105.0070</b> |
|                                     | 8                                                                 | 6,647  | 6,982       | <b>L0160105.0080</b> |
|                                     | 10                                                                | 8,376  | 8,751       | <b>L0160105.0100</b> |
|                                     | 12                                                                | 10,106 | 10,531      | <b>L0160105.0112</b> |
|                                     | 16                                                                | 13,835 | 14,310      | <b>L0160105.0116</b> |

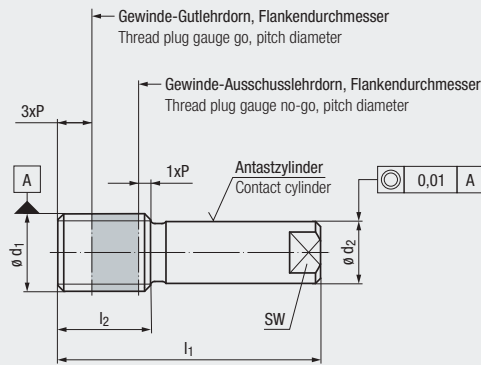
Gemäß DIN 13-50 beträgt beim geformten Innengewinde die **Toleranz** für den Flankendurchmesser 6H, für den **Innengewinde-Kerndurchmesser 7H**.

According to DIN 13-50, in a cold-formed thread the **tolerance** for the pitch diameter is 6H, for the **minor diameter of the internal thread** it is **7H**.

Weitere Ausführungen auf Anfrage  
Further designs upon request



DIN 13



Zur Prüfung der Gewindelage auf 3D-Messmaschinen und zur Rundlaufprüfung  
For checking the thread position on 3D measuring machines and radial run-out



|          | $\varnothing d_1$<br>mm | $\varnothing d_2$ | $l_1$ | $l_2$ | SW  |
|----------|-------------------------|-------------------|-------|-------|-----|
| <b>M</b> | 3                       | 2,2               | 25,5  | 4,5   | 2   |
|          | 4                       | 3                 | 30    | 6     | 2,5 |
|          | 5                       | 3,5               | 30    | 6     | 3   |
|          | 6                       | 4,5               | 32    | 8     | 4   |
|          | 8                       | 6                 | 34    | 10    | 5   |
|          | 10                      | 8                 | 36    | 12    | 6   |
|          | 12                      | 9                 | 40    | 16    | 8   |
|          | 16                      | 12                | 42    | 18    | 10  |
|          | 20                      | 12                | 42    | 18    | 10  |

Weitere Ausführungen auf Anfrage  
Further designs upon request

### Eigenschaften des kegeligen Gewinde-Rundlauf-Prüfdorns:

- Rundlaufgenauigkeit des Antastzylinders ( $\varnothing d_2$ ) zum Gewinde-Außendurchmesser ( $\varnothing d_1$ ) kleiner 0,01 mm
- Flankendurchmesser des Gewinde-Gutlehrdorns am 3. Gewindegang ( $3 \times P$ ) → ausreichende Führung im Gewinde
- Flankendurchmesser des Gewinde-Ausschusslehrdorns am vorletzten Gewindegang ( $l_2 - 1 \times P$ ) → Klemmung des Prüfdorns
- Der Gewinde-Außendurchmesser ist zylindrisch auf das Maß des Gewinde-Gut-Lehrdorns gefertigt um zu gewährleisten, dass der Prüfdorn im Flanken- und nicht im Außendurchmesser klemmt

### Handhabung des kegeligen Gewinde-Rundlauf-Prüfdorns:

- Der Prüfdorn wird von Hand bis zum Festsitz in das Innengewinde eingeschraubt
- Durch den leichten Formkegel im Flankendurchmesser auf die gesamte Gewindelänge ( $l_2$ ) zentriert sich die Achse des Prüfdorns mit der Achse des Innengewindes
- Die Koaxialität des Innengewindes kann über einen Messtaster am Antastzylinder ( $\varnothing d_2$ ) geprüft werden
- Die Prüfung des Innengewindes auf Lehrenhaltigkeit erfolgt mit herkömmlichen Gewinde-Lehrdornen (siehe Seite 546 - 547)

### Characteristics of the tapered plug gauge for checking radial run-out:

- Run-out accuracy of the contact cylinder ( $\varnothing d_2$ ) towards major diameter of thread ( $\varnothing d_1$ ) less than 0.01 mm
- Pitch diameter of the thread plug gauge go at third thread ( $3 \times P$ ) → sufficient lead in the thread
- Pitch diameter of the thread plug gauge go/no-go at the second to the last thread ( $l_2 - 1 \times P$ ) → clamping of the check plug gauge
- The major diameter of the thread is cylindrically made to fit the thread plug gauge go to guarantee that the check plug gauge jams in the pitch diameter and not in the major diameter

### Handling of the tapered thread plug gauge for checking radial run-out:

- The check plug gauge is manually screwed into the internal screw until properly tightened
- Thanks to the light taper shape in the pitch diameter along the entire length of the thread ( $l_2$ ), the axis of the check plug gauge is centred with the axis of the internal thread
- The coaxiality of the internal thread can be checked with a measuring probe at the contact cylinder ( $\varnothing d_2$ )
- The internal thread can be checked for true-to gauge accuracy with conventional thread plug gauges (see pages 546 - 547)

Product  
Finder

M

MF

UNC

UNF

Rp, R, Rc

NPT, NPTF

BSW

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
Rd

Glatt  
Smooth

GT, TD

Zubehör  
Accessories

PoCoSys

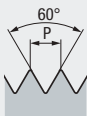
Kalibrieren  
Calibration



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# M

DIN 13



Lehrenmaße nach DIN ISO 1502  
Gauge dimensions acc. DIN ISO 1502



analog  
analogue



analog  
analogue



digital  
digital



CE<sup>1)</sup>

Toleranz · Tolerance

6H

6H

6H

Max. Gewindetiefe  
Max. thread depth

**4 x d<sub>1</sub>**

**2,5 x d<sub>1</sub>**

**2,5 x d<sub>1</sub>**

Ø d<sub>1</sub>  
mm

P  
mm

GT-GR-LD  
analog

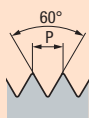
TD-Bit-GUT  
analog

GT-GR-LD  
digital IW

|          |    |      |               |               |               |
|----------|----|------|---------------|---------------|---------------|
| <b>M</b> | 2  | 0,4  | L1010100.0020 |               |               |
|          | 3  | 0,5  | L1010100.0030 |               |               |
|          | 4  | 0,7  | L1010100.0040 | L1040100.0040 | L1020300.0040 |
|          | 5  | 0,8  | L1010100.0050 | L1040100.0050 | L1020300.0050 |
|          | 6  | 1    | L1010100.0060 | L1040100.0060 | L1020300.0060 |
|          | 8  | 1,25 | L1010100.0080 | L1040100.0080 | L1020300.0080 |
|          | 10 | 1,5  | L1010100.0100 | L1040100.0100 | L1020300.0100 |
|          | 12 | 1,75 | L1010100.0112 | L1040100.0112 | L1020300.0112 |
|          | 14 | 2    | L1010100.0114 | L1040100.0114 | L1020300.0114 |
|          | 16 | 2    | L1010100.0116 |               | L1020300.0116 |
|          | 18 | 2,5  | L1010100.0118 |               | L1020300.0118 |
|          | 20 | 2,5  | L1010100.0120 |               |               |
|          | 22 | 2,5  | L1010100.0122 |               |               |
|          | 24 | 3    | L1010100.0124 |               |               |

<sup>1)</sup> EG-Konformitätserklärung siehe Seite 593  
EC Declaration of Conformity, see page 593

# MF



Metrisches ISO-Feingewinde DIN 13  
im gleichen Gewindeabmessungs-Bereich auf Anfrage erhältlich

ISO Metric fine threads DIN 13  
with identical thread dimensions are available on request



Sechskant-Bit-Adapter für Ausführung „digital IW“ optional erhältlich  
Hexagon bit adapter for version "digital IW" optionally available

### Zubehör Accessories



Abziehhülsen zum Austausch des Gut-Lehrenkörpers  
Pulling sleeves for exchange of the go gauge body

» 592



Hakenschlüssel zum Anziehen der Kontermutter bei GT-GR-LD  
Hook spanner for tightening the counter nut of GT-GR-LD

» 593



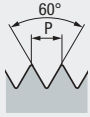
USB-Funkempfänger i-Stick für Ausführungen digital IW  
USB Wireless receiver i-Stick for versions digital IW

» 593



**UNC**

ASME B1.1



Lehrenmaße nach ANSI/ASME B1.2  
Gauge dimensions acc. ANSI/ASME B1.2



analog  
analogue



analog  
analogue



digital  
digital

CE<sup>1)</sup>

Toleranz · Tolerance

2B

2B

2B

Max. Gewindetiefe  
Max. thread depth

**4 x d<sub>1</sub>****2,5 x d<sub>1</sub>****2,5 x d<sub>1</sub>**

|                          |        |                  | GT-GR-LD<br>analog | TD-Bit-GUT<br>analog | GT-GR-LD<br>digital IW |
|--------------------------|--------|------------------|--------------------|----------------------|------------------------|
| ø d <sub>1</sub><br>inch | inch   | P<br>Gg/1" (tpi) |                    |                      |                        |
| Nr. 1                    | 0.0730 | 64               | L1010100.5000      |                      |                        |
| Nr. 2                    | 0.0860 | 56               | L1010100.5001      |                      |                        |
| Nr. 3                    | 0.0990 | 48               | L1010100.5002      |                      |                        |
| Nr. 4                    | 0.1120 | 40               | L1010100.5003      |                      |                        |
| Nr. 5                    | 0.1250 | 40               | L1010100.5004      | L1040100.5004        | L1020300.5004          |
| Nr. 6                    | 0.1380 | 32               | L1010100.5005      | L1040100.5005        | L1020300.5005          |
| Nr. 8                    | 0.1640 | 32               | L1010100.5006      | L1040100.5006        | L1020300.5006          |
| Nr. 10                   | 0.1900 | 24               | L1010100.5007      | L1040100.5007        | L1020300.5007          |
| Nr. 12                   | 0.2160 | 24               | L1010100.5008      | L1040100.5008        | L1020300.5008          |
| 1/4                      | 0.2500 | 20               | L1010100.5009      | L1040100.5009        | L1020300.5009          |
| 5/16                     | 0.3125 | 18               | L1010100.5010      | L1040100.5010        | L1020300.5010          |
| 3/8                      | 0.3750 | 16               | L1010100.5011      | L1040100.5011        | L1020300.5011          |
| 7/16                     | 0.4375 | 14               | L1010100.5012      | L1040100.5012        | L1020300.5012          |
| 1/2                      | 0.5000 | 13               | L1010100.5013      | L1040100.5013        | L1020300.5013          |
| 9/16                     | 0.5625 | 12               | L1010100.5014      |                      | L1020300.5014          |
| 5/8                      | 0.6250 | 11               | L1010100.5015      |                      | L1020300.5015          |
| 3/4                      | 0.7500 | 10               | L1010100.5016      |                      |                        |
| 7/8                      | 0.8750 | 9                | L1010100.5017      |                      |                        |

<sup>1)</sup> EG-Konformitätserklärung siehe Seite 593  
EC Declaration of Conformity, see page 593



Sechskant-Bit-Adapter für Ausführung „digital IW“ optional erhältlich  
Hexagon bit adapter for version "digital IW" optionally available

## Zubehör Accessories



Abziehhülsen zum Austausch des Gut-Lehrenkörpers  
Pulling sleeves for exchange of the go gauge body

» 592



Hakenschlüssel zum Anziehen der Kontermutter bei GT-GR-LD  
Hook spanner for tightening the counter nut of GT-GR-LD

» 593



USB-Funkempfänger i-Stick für Ausführungen digital IW  
USB Wireless receiver i-Stick for versions digital IW

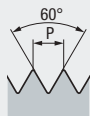
» 593



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| <b>UNF</b>                 |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| <b>GT, TD</b>              |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

# UNF

ASME B1.1



Lehrenmaße nach ANSI/ASME B1.2  
Gauge dimensions acc. ANSI/ASME B1.2



analog  
analogue



analog  
analogue



digital  
digital



CE<sup>1)</sup>

Toleranz · Tolerance

2B

2B

2B

Max. Gewindetiefe  
Max. thread depth

**4 x d<sub>1</sub>**

**2,5 x d<sub>1</sub>**

**2,5 x d<sub>1</sub>**

Ø d<sub>1</sub>  
inch      inch      P  
Gg/1" (tpi)

GT-GR-LD  
analog

TD-Bit-GUT  
analog

GT-GR-LD  
digital IW

|        |        |    |
|--------|--------|----|
| Nr. 1  | 0.0730 | 72 |
| Nr. 2  | 0.0860 | 64 |
| Nr. 3  | 0.0990 | 56 |
| Nr. 4  | 0.1120 | 48 |
| Nr. 5  | 0.1250 | 44 |
| Nr. 6  | 0.1380 | 40 |
| Nr. 8  | 0.1640 | 36 |
| Nr. 10 | 0.1900 | 32 |
| Nr. 12 | 0.2160 | 28 |
| 1/4    | 0.2500 | 28 |
| 5/16   | 0.3125 | 24 |
| 3/8    | 0.3750 | 24 |
| 7/16   | 0.4375 | 20 |
| 1/2    | 0.5000 | 20 |
| 9/16   | 0.5625 | 18 |
| 5/8    | 0.6250 | 18 |
| 3/4    | 0.7500 | 16 |
| 7/8    | 0.8750 | 14 |

|               |
|---------------|
| L1010100.5034 |
| L1010100.5035 |
| L1010100.5036 |
| L1010100.5037 |
| L1010100.5038 |
| L1010100.5039 |
| L1010100.5040 |
| L1010100.5041 |
| L1010100.5042 |
| L1010100.5043 |
| L1010100.5044 |
| L1010100.5045 |
| L1010100.5046 |
| L1010100.5047 |
| L1010100.5048 |
| L1010100.5049 |
| L1010100.5050 |
| L1010100.5051 |

|               |
|---------------|
| L1040100.5038 |
| L1040100.5039 |
| L1040100.5040 |
| L1040100.5041 |
| L1040100.5042 |
| L1040100.5043 |
| L1040100.5044 |
| L1040100.5045 |
| L1040100.5046 |
| L1040100.5047 |

|               |
|---------------|
| L1020300.5038 |
| L1020300.5039 |
| L1020300.5040 |
| L1020300.5041 |
| L1020300.5042 |
| L1020300.5043 |
| L1020300.5044 |
| L1020300.5045 |
| L1020300.5046 |
| L1020300.5047 |
| L1020300.5048 |
| L1020300.5049 |

1) EG-Konformitätserklärung siehe Seite 593  
EC Declaration of Conformity, see page 593



Sechskant-Bit-Adapter für Ausführung „digital IW“ optional erhältlich  
Hexagon bit adapter for version "digital IW" optionally available

### Zubehör Accessories



Abziehhülsen zum Austausch des Gut-Lehrenkörpers  
Pulling sleeves for exchange of the go gauge body

» 592



Hakenschlüssel zum Anziehen der Kontermutter bei GT-GR-LD  
Hook spanner for tightening the counter nut of GT-GR-LD

» 593

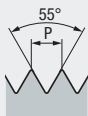


USB-Funkempfänger i-Stick für Ausführungen digital IW  
USB Wireless receiver i-Stick for versions digital IW

» 593

**G (BSP)**

DIN EN ISO 228



Lehrenmaße nach DIN EN ISO 228-2  
Gauge dimensions acc. DIN EN ISO 228-2



analog  
analogue



analog  
analogue



digital  
digital

CE<sup>1)</sup>

Toleranz · Tolerance

| Max. Gewindetiefe<br>Max. thread depth     |                        |                  | 4 x d <sub>1</sub> | 2,5 x d <sub>1</sub> | 2,5 x d <sub>1</sub>   |
|--------------------------------------------|------------------------|------------------|--------------------|----------------------|------------------------|
| Nenngröße<br>Nom. size<br>ø d <sub>1</sub> |                        |                  | GT-GR-LD<br>analog | TD-Bit-GUT<br>analog | GT-GR-LD<br>digital IW |
|                                            | ø d <sub>1</sub><br>mm | P<br>Gg/1" (tpi) |                    |                      |                        |
| G                                          | 1/16                   | 7,72             | 28                 | L1010100.4034        | L1020300.4034          |
|                                            | 1/8                    | 9,73             | 28                 | L1010100.4035        | L1020300.4035          |
|                                            | 1/4                    | 13,16            | 19                 | L1010100.4036        | L1020300.4036          |
|                                            | 3/8                    | 16,66            | 19                 | L1010100.4037        | L1020300.4037          |
|                                            | 1/2                    | 20,96            | 14                 | L1010100.4038        |                        |
|                                            | 5/8                    | 22,91            | 14                 | L1010100.4039        |                        |
|                                            |                        |                  |                    |                      |                        |

<sup>1)</sup> EG-Konformitätserklärung siehe Seite 593  
EC Declaration of Conformity, see page 593



Sechskant-Bit-Adapter für Ausführung „digital IW“ optional erhältlich  
Hexagon bit adapter for version "digital IW" optionally available

## Zubehör Accessories



Abziehhülsen zum Austausch des Gut-Lehrenkörpers  
Pulling sleeves for exchange of the go gauge body

» 592



Hakenschlüssel zum Anziehen der Kontermutter bei GT-GR-LD  
Hook spanner for tightening the counter nut of GT-GR-LD

» 593



USB-Funkempfänger i-Stick für Ausführungen digital IW  
USB Wireless receiver i-Stick for versions digital IW

» 593



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

### Sechskant-Bit-Adapter 1/4" für GUT-Lehrenkörper

Der Sechskant-Bit-Adapter dient als Aufnahme eines Gut-Lehrenkörpers in eine antreibende Einheit. Sein Einsatzgebiet findet er beim immer wiederkehrenden Lehren von Gewindelöchern mit einer Tiefe von bis zu 4 x D.

Durch die Ausführung der Drehbewegung mittels einer Antriebseinheit (z.B. Akkuschrauber, Druckluftschrauber oder Bohrmaschine) wird ein ermüdungsfreies Arbeiten im Dauerbetrieb ermöglicht.

### Hexagon bit adapters 1/4" for gauging bodies GO

The hexagon bit adapter serves as holder for the gauge body GO in a power driven unit. It is used for repeatably gauging thread holes with a maximum depth of 4 x D.

As a power driven unit such as cordless or pressurised air screwdrivers or drill machines provide the rotation, an effortless and long-term working is possible.



Max. Gewindetiefe  
Max. thread depth

4 x d<sub>1</sub>

| Metrische Gewinde<br>Metric threads | Unified-Gewinde<br>Unified threads | Whitworth-Rohrgewinde<br>Whitworth pipe threads | Aufnahme-Durchmesser<br>Seat diameter | empf. Drehmoment<br>recommended torque |               |
|-------------------------------------|------------------------------------|-------------------------------------------------|---------------------------------------|----------------------------------------|---------------|
| M 2 - M 3                           | Nr. 1 - Nr. 4                      | —                                               | 2,5                                   | 6 Ncm                                  | L0091070.02.5 |
| M 4 - M 6                           | Nr. 5 - Nr. 12                     | —                                               | 4                                     | 8 Ncm                                  | L0091070.04   |
| M 8 - M10                           | 1/4 - 3/8                          | G 1/16 - G 1/8                                  | 5,5                                   | 14 Ncm                                 | L0091070.05.5 |
| M12 - M14                           | 7/16 - 1/2                         | G 1/4                                           | 7                                     | 20 Ncm                                 | L0091070.07   |
| M16 - M18                           | 9/16 - 5/8                         | G 3/8                                           | 9                                     | 30 Ncm                                 | L0091070.09   |
| M20 - M24                           | 3/4 - 15/16                        | G 1/2 - G 5/8                                   | 12                                    | 40 Ncm                                 | L0091070.12   |

Gut-Lehrenkörper auf Anfrage (nicht im Lieferumfang enthalten)  
Gauging bodies GO upon request (not included)

### Abziehhülsen

Zum Austausch der Lehrenkörper bei analogen Gewindetiefen-Lehrdornen

### Pulling sleeves

For the exchange of gauging bodies in analogue thread depth plug gauges



Abziehhülse  
Pulling sleeve

Sechskantmutter  
Hexagon nut

| Metrische Gewinde<br>Metric threads | Unified-Gewinde<br>Unified threads | Whitworth-Rohrgewinde<br>Whitworth pipe threads | Aufnahme-Durchmesser<br>Seat diameter |               |
|-------------------------------------|------------------------------------|-------------------------------------------------|---------------------------------------|---------------|
| M 2 - M 3                           | Nr. 1 - Nr. 4                      | —                                               | 2,5                                   | L0091040.02.5 |
| M 4 - M 6                           | Nr. 5 - Nr. 12                     | —                                               | 4                                     | L0091040.04   |
| M 8 - M10                           | 1/4 - 3/8                          | G 1/16 - G 1/8                                  | 5,5                                   | L0091040.05.5 |
| M12 - M14                           | 7/16 - 1/2                         | G 1/4                                           | 7                                     | L0091040.07   |
| M16 - M18                           | 9/16 - 5/8                         | G 3/8                                           | 9                                     | L0091040.09   |
| M20 - M24                           | 3/4 - 15/16                        | G 1/2 - G 5/8                                   | 12                                    | L0091040.12   |

Sechskantmutter nicht im Lieferumfang enthalten  
Hexagon nut not included

Abziehhülse für Ausführung digital IW auf Anfrage  
Pulling sleeve for version digital IW upon request



**Hakenschlüssel**

Zum Festziehen der Kontermutter

**Hook spanner**

For tightening the counter nut



| Nenn Durchmesser<br>Nominal diameter | Metrische Gewinde<br>Metric threads | Unified-Gewinde<br>Unified threads | Whitworth-Rohrgewinde<br>Whitworth pipe threads |                      |
|--------------------------------------|-------------------------------------|------------------------------------|-------------------------------------------------|----------------------|
| ≤ 3 mm                               | M 2 - M 3                           | Nr. 1 - Nr. 4                      | —                                               | <b>L0091410.02.5</b> |
| > 3 - 6 mm                           | M 4 - M 6                           | Nr. 5 - Nr. 12                     | —                                               | <b>L0091410.04</b>   |
| > 6 - 10 mm                          | M 8 - M10                           | 1/4 - 3/8                          | G 1/16 - G 1/8                                  | <b>L0091410.05.5</b> |
| > 10 - 14 mm                         | M12 - M14                           | 7/16 - 1/2                         | G 1/4                                           | <b>L0091410.07</b>   |
| > 14 - 18 mm                         | M16 - M18                           | 9/16 - 5/8                         | G 3/8                                           | <b>L0091410.09</b>   |
| > 18 - 24 mm                         | M20 - M24                           | 3/4 - 15/16                        | G 1/2 - G 5/8                                   | <b>L0091410.12</b>   |

**Funkempfänger i-Stick  
für Ausführungen „digital IW“**

- Frequenzband 2.400 MHz
- Max. Funkdistanz 6 m
- Datenschnittstelle USB
- Systemanforderung:  
PC mit Microsoft® Excel® (ab 97),  
Microsoft® Windows® (ab XP) und  
USB-Schnittstelle (ab 1.1), sowie  
min. 10 MB freier Festplattenspeicher

**Wireless receiver i-Stick  
for versions “digital IW”**

- Frequency band 2.400 Mhz
- Max. communication range 6 m
- Data interface USB
- System requirement:  
PC with Microsoft® Excel® (97 or later version),  
Microsoft® Windows® (XP or later version) and  
USB port (from 1.1), and  
min. 10 MB available hard disk space



i-Stick

**L0091500.01**

Die kostenlose Schnittstellensoftware MarCom Professional sorgt für die sichere, professionelle Übertragung Ihrer Messdaten an Ihre Windows-Anwendungen oder CAQ-Software.

The MarCom Professional, our free interface software, reliably and professionally transfers your measurements to your Windows applications or CAQ software.

**Download:**
<https://mahr.canto.global/b/RR4S5>
**EG-Konformitätserklärung****CE-Kennzeichnung für Ausführungen digital IW**

EMUGE erklärt, dass die bezeichneten Produkte in ihrer Konzipierung und Bauart sowie in den in Verkehr gebrachten Ausführungen den grundlegenden Sicherheits- und Gesundheitsanforderungen der EG-Richtlinie 2004/108/EG über elektromagnetische Verträglichkeit (EMV) sowie der EG-Richtlinie 2006/95/EG über Niederspannung entspricht. Bei einer mit EMUGE nicht abgestimmten Änderung der Produkte verliert diese Erklärung ihre Gültigkeit.

**Hinweis:**

Eine gleichlautende Erklärung für Märkte außerhalb der Europäischen Union (bzw. dem EWR) liegt EMUGE nicht vor. Der Inverkehrbringer der Produkte außerhalb der EU übernimmt die Verantwortung für den Einsatz gemäß der im Drittland geltenden Gesetzesvorgaben selbst.

**EC Declaration of Conformity****CE marking for designs digital IW**

EMUGE declares, that the described products, based on their conceptual design and version placed on the market complies with the essential Safety and Health Regulations according to Directive 2004/108/EC concerning Electromagnetic Compatibility (EMC) and with the Low Voltage Directive 2006/95/EC. If any alteration is made on this products without the prior consent of EMUGE, this declaration shall cease to apply.

**Remark:**

An identical declaration for markets outside the European Union (resp. the European Economic Area) is not available to EMUGE. The distributor of the product outside the EU assumes sole responsibility for the use in accordance with the specific legal regulations in the third country.

Product  
Finder

M

MF

UNC

UNF

Rp, R, Rc

NPT, NPTF

BSW

Pg

MJ

UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
RdGlatt  
Smooth

GT, TD

Zubehör  
Accessories

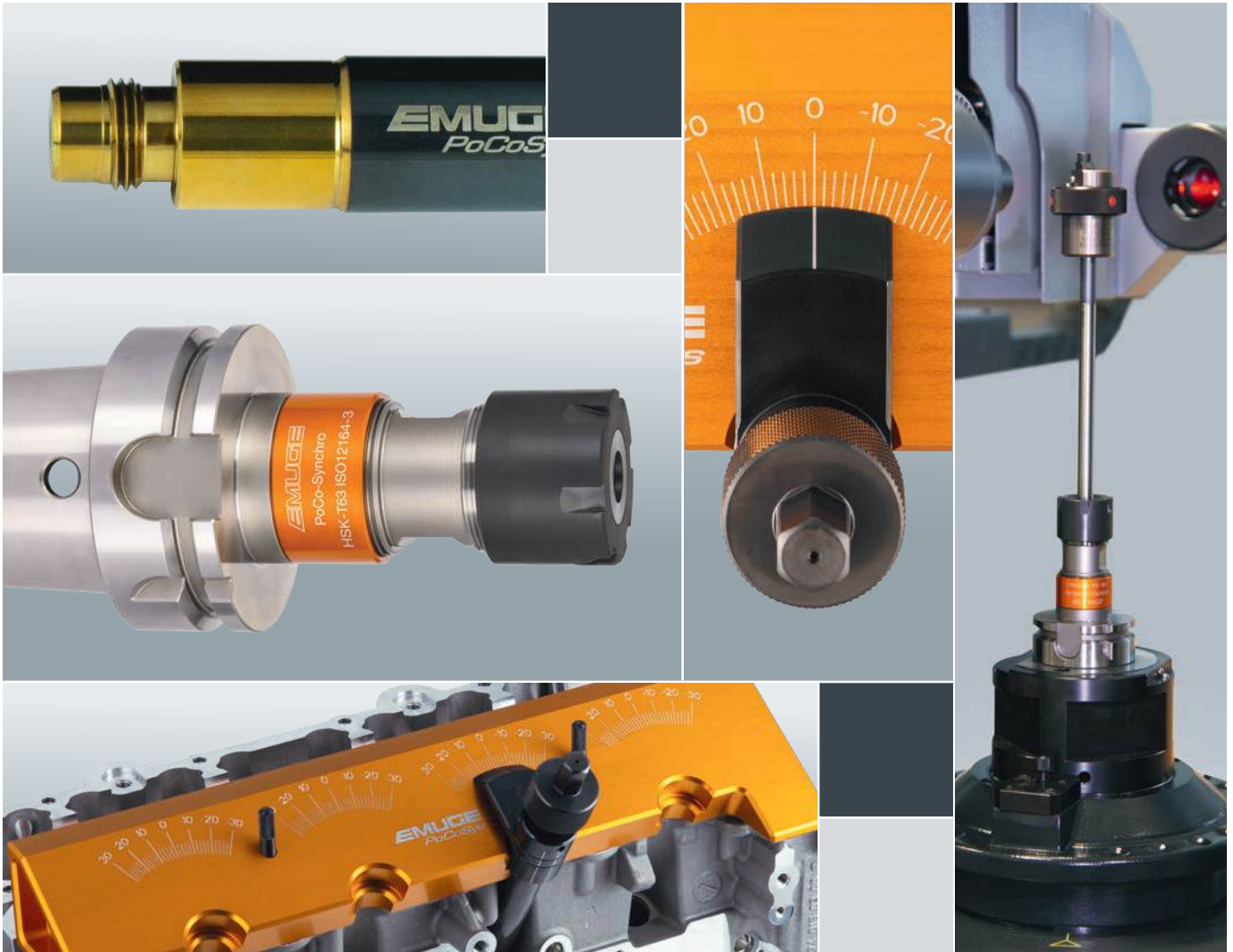
PoCoSys

Kalibrieren  
Calibration



| Product Finder             |
|----------------------------|
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |





## Einstell- und Prüfsystem für stellungsgebundene Gewinde Setting and Inspection System for Threads with Specified Starting Position



|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

Bei der Innengewindeherstellung gibt es zunehmend Anforderungen, die eine genaue Position des Gewindeanfangs vorschreiben. Dies ist beispielsweise bei automatischer Verschraubung von Schaltern, Sensoren oder elektronischen Steckern der Fall, bei denen die radiale Ausrichtung eine direkte Auswirkung auf die Funktionsfähigkeit hat.

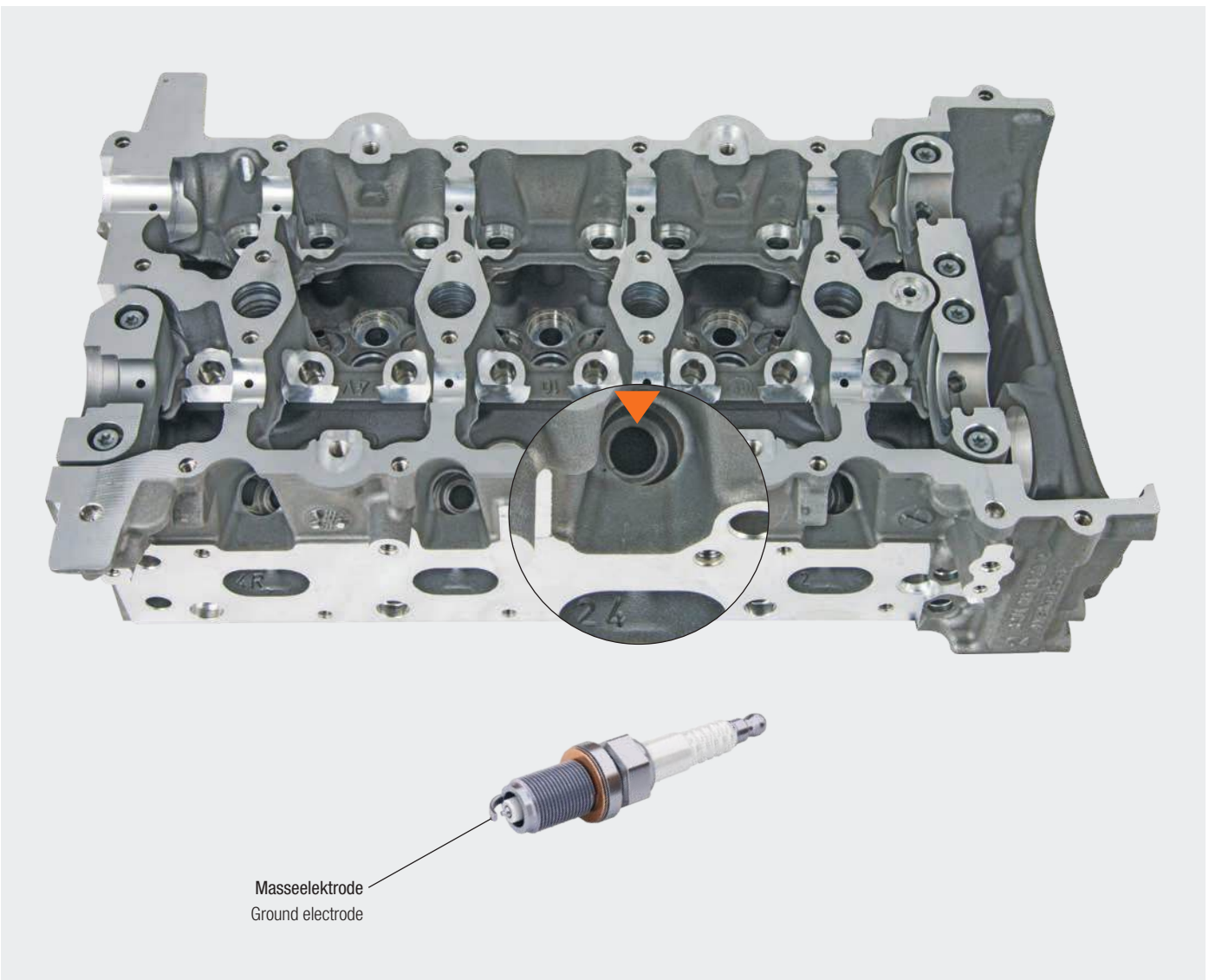
Auch im Motorenbau gibt es Erfordernisse für stellungsgebundene Gewinde. So ist zum Beispiel bei der Montage von Zündkerzen die Lage der Masseelektrode zum Gewinde vorgeschrieben, was zu einer besseren Verbrennung und damit zur Reduzierung der Emissionsgrenzwerte führt. Speziell für die stellungsgebundene Herstellung und Prüfung von Zündkerzengewinden wurde das PoCoSys-Programm entwickelt. Es ermöglicht die manuelle Gewindeprüfung direkt an der Fertigungsmaschine oder die maschinelle Gewindeprüfung auf 3D-Messmaschinen.

Alle Komponenten wurden perfekt aufeinander abgestimmt – von der Werkzeugaufnahme über die Gewindewerkzeuge bis hin zu den Einstelllehren und Prüfmitteln.

There is an increasing number of demands in the production of internal threads with specified starting position. For example, this applies to automatic screwing processes of switches, sensors or electronic plugs where the radial orientation has a direct impact on function.

There are also requirements for threads with specified starting position in engine constructions. For example, in the assembly of spark plugs, the position of the ground electrode relative to the thread is specified, which results in better combustion thus reducing the emission limit values. The PoCoSys programme was developed especially for the production and inspection of spark plug threads with specified thread start. It enables the manual inspection of threads directly on the production machine or a machine conducted test of threads on 3D measuring machines.

All components are perfectly matched to each other – from the tool holder via the threading tools to the setting gauges and test equipment.



Am Zylinderkopf sieht man in der Vergrößerung die Planfläche, die den Bezugspunkt für das Zündkerzengewinde darstellt. Der Gewindeanfang liegt hier z.B. an der Oberseite (orangene Markierung). Dieser ist auch mit dem Zündkerzenhersteller abgestimmt, der wiederum die Zündkerze mit eingeschränkter Toleranz anbietet.

A magnified image of the cylinder head shows the plane surface, which serves as reference point for the spark plug thread. The start of the thread in this case is at the top (orange marking). This is also coordinated with the spark plug manufacturer, who in turn offers the spark plug with a tighter tolerance.



## PoCo-Gauge Box



## PoCoSys

Seite · Page

Koffer mit Gewindelehrenset

Box with thread gauge set

598 - 600

zur **manuellen** Gewindeprüfungfor **manual** thread inspection

## PoCo-Gauge 3D



Seite · Page

Spezial-Gewinde-Gut-Lehrdorn

Special thread plug gauge GO

601

zur **maschinellen** Gewindeprüfungfor **machine** thread inspection

## PoCo-Bush



Seite · Page

Positions-Einstell-Hülse

Position-setting bush

602 - 603

zur **Bestimmung der Winkellage**  
des Werkzeugesfor **determining the angular position**  
of the tool

## PoCo-Synchro



Seite · Page

Spannzangen-Aufnahme  
für GewindewerkzeugeCollet holder  
for threading tools

604

mit eingengter Mitnehmernut  
für **höhere Winkelgenauigkeit**with tighter tolerance of drive slot  
for **increased angular accuracy**Product  
Finder

M

MF

UNC

UNF

U

Rp, R, Rc

NPT, NPTF

BSW

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
RdGlatt  
Smooth

GT, TD

Zubehör  
Accessories

PoCoSys

Kalibrieren  
Calibration

### PoCo-Gauge Box

Koffer mit Gewindelehrenset  
zur manuellen Gewindeprüfung

Box with set of thread gauges  
for manual position inspection



Die Komponenten der **PoCo-Gauge Box** ermöglichen eine manuelle Prüfungsstellungsgewinde direkt am Bauteil an der Fertigungsmaschine. Hierfür werden keine weiteren Geräte oder Messmaschinen benötigt.

Durch die einfache Handhabung ist ein kontinuierliches Prüfen an der Maschine möglich, wodurch Abweichungen frühzeitig erkannt werden. Dies führt zu Zeit- und Ressourceneinsparungen gegenüber der Prüfung auf 3D-Messmaschinen.

The components of the **PoCo-Gauge Box** enable the manual position inspection of threads with specified start position directly on the workpiece at the production machine. No additional devices or measuring machines are required.

The easy handling facilitates the continuous inspection at the machine and thereby helps to recognise deviations at an early stage.

This results in time and resource savings compared to inspections with 3D measuring machines.

#### Kundennutzen

- Bis zu 90% Ersparnis gegenüber einer Messung mit Messmaschine
- Gewindeprüfung mittels Gewinde-Gut-Lehrdorn
- Flankendurchmesserunabhängiges Prüfen
- Praxisnahe Prüfung der Gewindestellung zur Planfläche
- Kein Umspannen des Bauteils notwendig
- Einfache Bedienung, keine aufwändige Einweisung erforderlich
- Sofortiges Ablesen der Zündkerzenstellung
- Einbindung in den Zertifizierungszyklus möglich
- Kundenspezifische Anpassung des Prüfsystems an das Werkstück

#### Customer benefits

- Savings up to 90% compared to measuring with a measuring machine
- Thread inspection with a thread plug gauge GO
- Gauging independent of pitch diameter
- Practical inspection of thread position relative to flat face
- No reclamping of workpiece necessary
- Easy handling, no time-consuming instruction required
- Immediate reading of spark plug position
- Integration into certification cycle possible
- Customer specific adaptation of inspection system to workpiece

## Systemkomponenten

## System components

Anschlagplatte mit Skalierung und angefederten Fixierschrauben

Limit plate with scale and spring-loaded fixing screws



PoCo-Plate

Gewinde-Gut-Lehrdorn (Arbeitslehre) mit Positionsbüchse

Thread plug gauge GO (working gauge) with position sleeve



PoCo-Gauge

Masterlehre (Prüflehre) für PoCo-Gauge

Master gauge (check and adjustment gauge) for PoCo-Gauge



PoCo-Gauge Master



Optional ist als Zubehör ein Standfuß mit Schutzkappe für die PoCo-Gauge Master erhältlich.  
A stand with protective cap for the PoCo-Gauge Master is optionally available as accessory.



### PoCo-Gauge Box

|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| G                          |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |

| Prüfvorgang                                                                                                | Test procedure                                                                                            |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| 1. Auflegen der <b>PoCo-Plate</b> am Zylinderkopf mit Einfügen der Positionsstifte in die Passbohrungen.   | 1. Place the <b>PoCo-Plate</b> on the cylinder head by inserting positioning pins into the fitting bores. |
| 2. Fixierschraube zum Befestigen der <b>PoCo-Plate</b> eindrehen.                                          | 2. Tighten fixing screw to fasten the <b>PoCo-Plate</b> .                                                 |
| 3. Einschrauben der <b>PoCo-Gauge</b> in das Zündkerzengewinde und Anziehen mit einem Drehmomentschlüssel. | 3. Screw in the <b>PoCo-Gauge</b> into the thread for the spark plug and tighten with a torque wrench.    |
| 4. Ablesen der Zündkerzenstellung (Gewindeanfang) an der Skalierung.                                       | 4. Read the position of the spark plug on the scale.                                                      |



#### Überprüfung der PoCo-Gauge auf Positionsgenauigkeit

Der **PoCo-Gauge** und die **PoCo-Gauge Master** sind werksseitig voreingestellt. Für eine Selbstkontrolle des **PoCo-Gauge** wird die **PoCo-Gauge Master** benötigt.

Der **PoCo-Gauge** wird in die **PoCo-Gauge Master** eingeschraubt und mit einem festgelegten Drehmoment angezogen. Die Markierungslinien zeigen den Ist-Zustand der **PoCo-Gauge Arbeitslehre** an und müssen zwischen Neuzustand (Go) und Verschleißgrenze (No-Go) liegen.

Bei einer Abweichung sind **PoCo-Gauge** und **PoCo-Gauge Master** zum Prüfen im Set an EMUGE zu senden.

#### Inspection of positional accuracy of the PoCo-Gauge

The **PoCo-Gauge** and the **PoCo-Gauge Master** are preset by EMUGE. For a self-check of the **PoCo-Gauge** the **PoCo-Gauge Master** is required.

The **PoCo-Gauge** is screwed into the **PoCo-Gauge Master** and tightened with a specified torque. The marking lines indicate the actual state of the **PoCo-Gauge working gauge** and they must be between new condition (Go) and wear limit (No-Go).

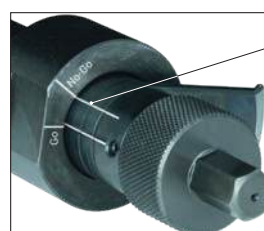
In case of deviations, the **PoCo-Gauge** and **PoCo-Gauge Master** must be returned to EMUGE for inspection.



Markierungslinie im Neuzustand (Go)  
Marking line in new condition (Go)



Markierungslinie für die Verschleißgrenze (No-Go)  
Marking line for wear limit (No-Go)





## PoCo-Gauge 3D

**Spezial-Gewinde-Gut-Lehrdorn  
zur maschinellen Gewindeprüfung**
**Special thread plug gauge GO  
for inspection of thread position on measuring machine**


Zur Dokumentation und Qualitätsprüfung stellungsgebundener Gewinde erfolgt die Überprüfung auf 3D-Messmaschinen zusätzlich zur manuellen Methode.

For documentation and quality inspection purposes of threads with specified starting point, the tests are conducted on 3D measuring machines in addition to manual inspection.

**Kundennutzen**

- Gewindeprüfung mittels Spezial-Gewinde-Gut-Lehrdorn **PoCo-Gauge 3D**
- Flankendurchmesserunabhängiges Prüfen in der Messmaschine durch Abtasten der stellungsgebundenen Fläche
- Praxisnahe Prüfung der Gewindestellung zur Planfläche
- Auslieferung mit Prüfzertifikat, dadurch Einbindung in den kundenseitigen Zertifizierungszyklus möglich
- Fertigung nach kundenspezifischen Vorgaben

**Customer benefits**

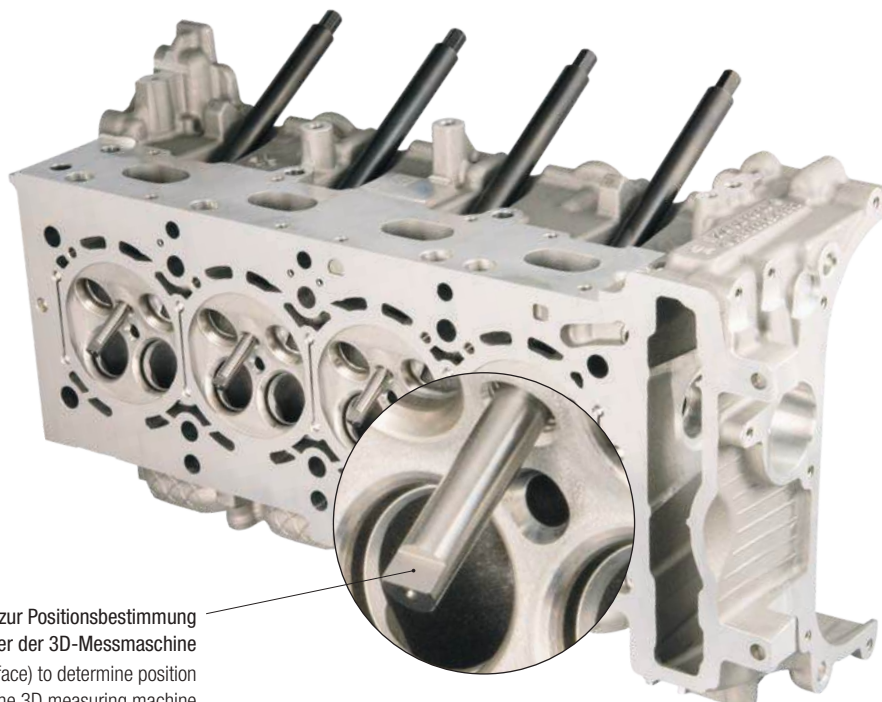
- Thread position inspection with special thread plug gauge GO **PoCo-Gauge 3D**
- Inspection in measuring machine independent of pitch diameter thanks to scanning the surface with specified position
- Practical inspection of thread position relative to flat surface
- Delivered with inspection certificate, therefore integration into customer's certification cycle is possible
- Production according to customer-specific requirement

**Prüfvorgang**

Beim Prüfen in einer 3D-Messmaschine wird in jedes Zündkerzengewinde ein **PoCo-Gauge 3D** eingeschraubt und mit einem festgelegten Drehmoment (Empfehlung 5 Nm) angezogen. Die Messung der Winkellage findet im Brennbereich statt. Hierzu wird durch Abtasten der Orientierungsfläche der Stellungswinkel ermittelt.

**Inspection procedure**

During testing in a 3D measuring machine a **PoCo-Gauge 3D** is screwed into each spark plug thread and tightened with a specified torque (recommended 5 Nm). The angular position is measured in the combustion area. The positional angle is determined by scanning the orientation surface.



Orientierungsfläche (Tastfläche) zur Positionsbestimmung für Messtaster der 3D-Messmaschine  
Orientation surface (touch surface) to determine position for measuring probes of the 3D measuring machine

|                            |
|----------------------------|
| Product Finder             |
| M                          |
| MF                         |
| UNC                        |
| UNF                        |
| Rp, R, Rc                  |
| NPT, NPTF                  |
| BSW                        |
| Pg                         |
| MJ<br>UNJC, UNJF           |
| EG (STI)                   |
| SELF-LOCK                  |
| Tr, Tr-F<br>Rd             |
| Glatt<br>Smooth            |
| GT, TD                     |
| Zubehör<br>Accessories     |
| PoCoSys                    |
| Kalibrieren<br>Calibration |



### PoCo-Bush

**Positions-Einstell-Hülse**  
zur Bestimmung der Winkellage des Werkzeuges

Position-setting bush  
to determine the angular position of the tool



Beim Gewindeschneiden und Gewindeformen ist das stellungsgebundene Ausrichten des Werkzeuges sehr aufwändig.

Einfacher und genauer geht es mit der Positions-Einstell-Hülse **PoCo-Bush**. Mit der **PoCo-Bush** ist die Winkellage der Werkzeuge zur Index-Kerbe „Deutsches Eck“ bei HSK-Schäften in wenigen Schritten in einem Voreinstellgerät bestimmbar. Die Werte aus dem Voreinstellgerät können anschließend direkt in die Maschinensteuerung eingegeben werden.

In Verbindung mit der speziellen Spannzangen-Aufnahme für Gewindewerkzeuge **PoCo-Synchro** (siehe Seite 604) ist eine Winkelgenauigkeit von kleiner 5° und damit eine stellungsgebundene Gewindefertigung möglich.

The correct positioning of tools is very time-consuming when cutting or cold-forming threads with specified start position.

The position-setting bush **PoCo-Bush** makes this an easy and accurate procedure. Thanks to the **PoCo-Bush** the angular position of tools relative to the index notch of HSK shanks can be determined in few steps with a presetting device. Afterwards the values of the presetting device can be entered directly into the machine control unit.

Together with the special collet holder for threading tools **PoCo-Synchro** (see page 604) the angle can be determined with an accuracy of smaller 5° and as a result the production of threads with specified start position is possible.

#### Kundennutzen

- Praxisnahe Ermittlung des Gewindestartpunktes
- Einfache Handhabung
- Kein aufwändiges Ausmessen der Gewindebohrer/-former
- Kein zusätzliches Markieren der Werkzeuge und Aufnahmen
- Bestimmung der Winkellage (C-Achse) ohne Eingreifen in das CNC-Programm nur über Werkzeug-Längenkorrektur möglich
- Werkzeugschonende Ausführung durch innenliegende Kunststoffhülse
- Mit integrierter Ratsche, dadurch kein zusätzlicher Drehmomentschlüssel notwendig
- Stellungsgebundene Ausrichtung ab dem ersten Gewinde

#### Customer benefits

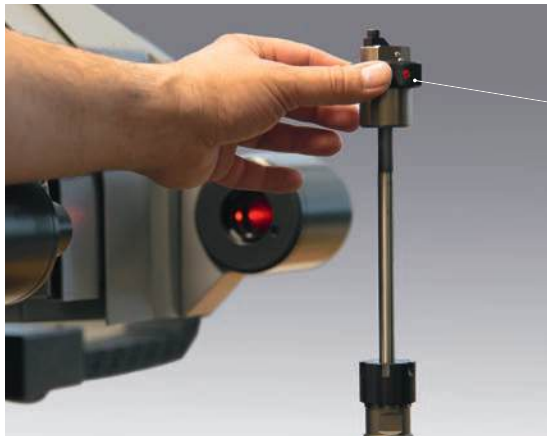
- Practical determination of start position of thread
- Easy handling
- Eliminates time-consuming measuring of taps/cold-forming taps
- No additional marking of tools and holders necessary
- Angular position (C-axis) can be determined without modifying the CNC programme, only with length adjustment of tool
- Design with internal plastic sleeve avoids damage to the tool
- With integrated ratchet, therefore no additional torque wrench required
- Correct start position from the first thread

## Funktionsweise

## Functionality

Die **PoCo-Bush** wird mittels der angebrachten Ratsche auf einen bereits eingespannten Gewindebohrer bzw. Gewindeformer gegen den Anschlag verschraubt. Dadurch ist ein werkzeugschonendes Aufschrauben gewährleistet.

The **PoCo-Bush** is screwed onto a clamped tap or cold-forming tap using the attached ratchet until it reaches the end stop. This procedure ensures a screwing operation which reduces stress on the tools.



Aufschrauben mittels Ratsche  
Screw mounting with ratchet

Im Anschluss wird der Messzyklus des Voreinstellgerätes gestartet. Über die Axial- und Radialkugel wird die Winkellage (C-Achse) und das Längenmaß (Z-Achse) ermittelt. Die beschrifteten Korrekturwerte werden zur Winkellage bzw. zum Längenmaß addiert (beide im Zyklus enthalten) und ergeben die exakten Einstellwerte.

Afterwards the measuring cycle of the presetting device can be started. The angular position (C-axis) and length dimension (Z-axis) are determined by means of the axial and radial position balls. The marked corrected values are added to the angular position respectively to the length dimension (both included in the cycle) and result in the accurate setting values.

Diese beiden Werte (C-Achse und Z-Achse) werden anschließend in den Gewindeschneidzyklus in der Maschinensteuerung eingegeben. Alternativ ist die Eingabe der Winkellage (C-Achse) auch über das Längenkorrekturmaß möglich. Voraussetzung hierfür ist ein synchroner Gewindeschneidzyklus, welcher über die Winkellage startet.

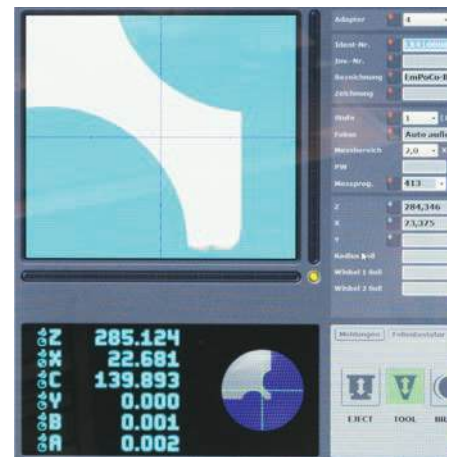
Then, both data (C-axis and Z-axis) must be entered in the tapping cycle of the machine control unit. Alternatively, it is possible to enter the angular position (C-axis) via the length correction value. A precondition for that is a synchronous tapping cycle which is started via the angular position.

Die Winkellage kann im Anschluss mit den PoCoSys-Prüfsystemen an der Fertigungsmaschine oder in der 3D-Messmaschine überprüft werden.

And finally the angular position can be rechecked with the PoCoSys test systems on the production machine or on the 3D measuring machine.



Voreinstellgerät zur vollautomatischen Messung, inklusive automatischer Rotation  
Presetting device with automatic measuring, including rotation.



### Die Genauigkeit ist von folgenden Punkten abhängig:

- Genaue Synchronisierung von Maschine und Steuerung
- Exakte Planseitenbearbeitung (z.B. Plananlage der Zündkerze)
- Spannzangen-Aufnahme für Gewindewerkzeuge **PoCo-Synchro** (siehe Seite 604)
- Gewindebohrer bzw. Gewindeformer
- Positions-Einstell-Hülse **PoCo-Bush**
- Voreinstellgerät mit automatischer Rotation (empfohlen)

### The accuracy depends on the following conditions:

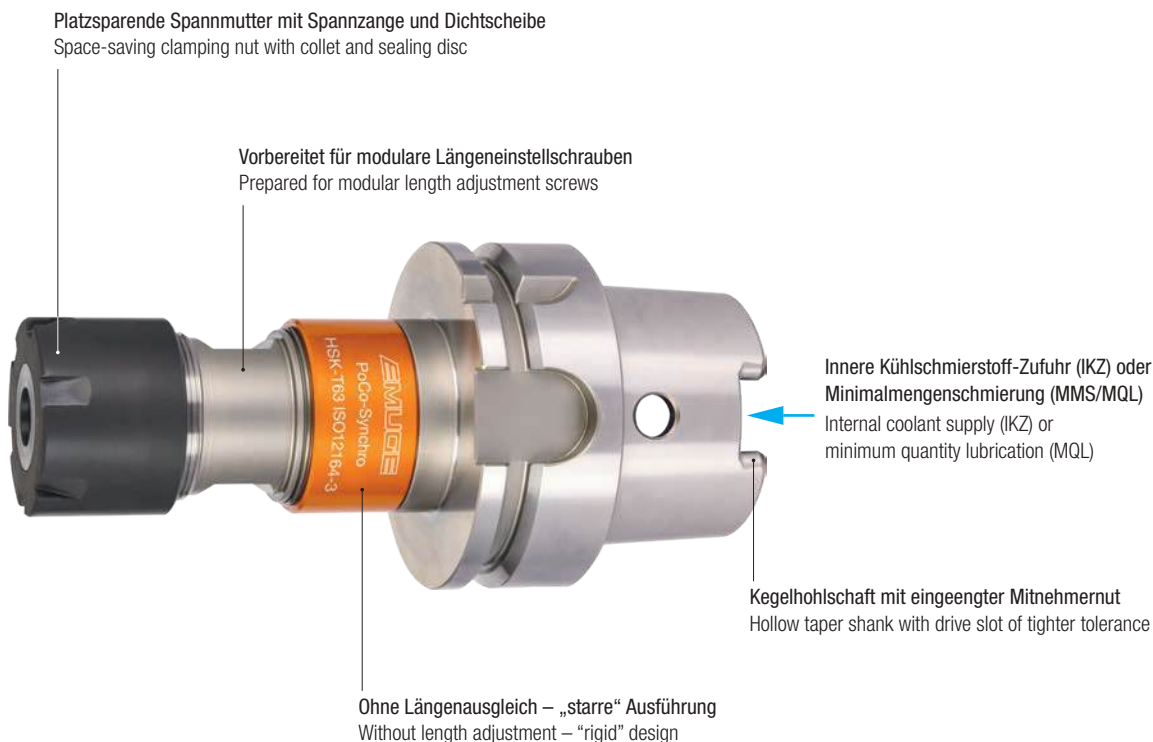
- Correct synchronisation of machine and control unit
- Accurate machining of face side (e.g. contact face of spark plug)
- Collet holder for threading tools **PoCo-Synchro** (see page 603)
- Tap respectively cold-forming tap
- Position-setting bush **PoCo-Bush**
- Presetting device with automatic rotation (recommended)



### PoCo-Synchro

**Spannzangen-Aufnahme für Gewindewerkzeuge mit eingegengter Mitnehmernut für höhere Winkelgenauigkeit**

**Collet holder for threading tools with a drive slot of tighter tolerance for improved angular accuracy**



Für eine exakte Werkzeugführung empfiehlt sich die Spannzangen-Aufnahme für Gewindewerkzeuge **PoCo-Synchro** mit Kegel-Hohlschaft HSK-T nach DIN 69893-7 bzw. ISO 12164-3.

Eine in der Toleranz eingegengte Mitnehmernut garantiert höchste Genauigkeiten bei der stellungsgebundenen Gewindeherstellung und reduziert die Positionsabweichung auf ein Minimum. Dadurch sind Winkelgenauigkeiten kleiner 5° möglich.

In order to optimise tool guidance it is recommended to use the collet holder for threading tools **PoCo-Synchro** with hollow taper shank HSK-T according to DIN 69893-7 respectively ISO 12164-3.

A drive slot with tighter tolerance guarantees the highest possible accuracy in the production of threads with specified start position and at the same time reduces any positional deviation to a minimum.

As a result, an angular accuracy smaller 5° is possible.

#### Kundennutzen

- Gleichbleibende Positionierung und Wiederholbarkeit durch eingegengte Mitnehmernut
- Platzsparende Spannmutter Hi-Q/ERMC mit ER-Spannzange und Dichtscheibe
- Modulare Bauweise, vorbereitet für IKZ- oder MMS-Längeneinstellschraube
- Mit innerer Kühlschmierstoff-Zufuhr (IKZ) bis 50 bar oder Minimalmengenschmierung (MMS/MQL) verwendbar

#### Customer benefits

- Consistent positioning and repeatability thanks to tighter tolerance of drive slot
- Space-saving collet Hi-Q/ERMC with ER collet and sealing disk
- Modular design, prepared for IKZ or MQL length adjustment screw
- For use with internal coolant supply (IKZ) up to 50 bar or minimum quantity lubrication (MQL)







## DECOM-Prüflabor im Hause EMUGE DECOM Calibration Laboratory at EMUGE

Product  
Finder

M

MF

UNC

UNF

U

Rp, R, Rc

NPT, NPTF

BSW

Pg

MJ  
UNJC, UNJF

EG (STI)

SELF-LOCK

Tr, Tr-F  
Rd

Glatt  
Smooth

GT, TD

Zubehör  
Accessories

PoCoSys

Kalibrieren  
Calibration





EMUGE bietet Ihnen umfangreiche Leistungen zur Kalibrierung Ihrer Lehren und Messmittel durch unseren Kooperationspartner DECOM UGK GmbH, ein unabhängiges Kalibrierlabor, ansässig im Hause EMUGE. Die DECOM UGK GmbH ist ein seit 1998 DAkkS-akkreditiertes Prüflabor für Länge und weitere geometrische Größen (z.B. Gewindelehren, Messuhren, Feinzeiger, Fühlhebelmessgeräte, Bügelmessschrauben, Messschieber, usw.) gemäß EN/ISO/IEC 17025. Die messtechnische Ausstattung, das Personal und die Umgebungsbedingungen unterliegen der Überwachung durch die DAkkS (Deutsche Akkreditierungsstelle GmbH).

EMUGE offers you comprehensive services for the calibration of your gauges and measuring tools by our cooperation partner DECOM UGK GmbH, an independent calibration laboratory on the premises of EMUGE-Werk at Lauf. DECOM UGK GmbH has been a DAkkS-accredited calibration laboratory for length and other geometric quantities (e.g. thread gauges, dial gauges, dial gauge instruments, dial test indicators, micrometer gauges, caliper gauges etc.) acc. EN/ISO/IEC 17025 since 1998. The technical measuring equipment, the personnel and the environmental conditions are subject to surveillance by the DAkkS (German Accreditation Body).



[www.decom-ugk.de](http://www.decom-ugk.de)

## Gerätetechnische Ausstattung

### Bezugsnormale und Normalmesseinrichtungen:

Für sämtliche im Kundenauftrag durchgeführten Messungen wird der Anschluss an nationale und internationale Normale sichergestellt. Dazu werden Normale und Normalmesseinrichtungen bereitgehalten, die in regelmäßigen Abständen durch innerhalb der WECC anerkannte Kalibrierstellen rekaliert werden.

### Rückführbarkeit der Messgeräte auf nationale Normale

Für die Durchführung der Prüfmittelüberwachung von Betriebsmitteln steht ein umfangreicher Gerätepark zu Verfügung. Die Messgeräte und Messeinrichtungen werden durch regelmäßige externe sowie interne Kalibrierung unter Verwendung der Bezugsnormale und Normalmesseinrichtungen an nationale Normale angeschlossen.

## Technical Equipment

### Reference Standards and Standard Measuring Devices:

The compliance with national and international standards of all measurements commissioned by customers is guaranteed. All necessary standards and standard measuring devices are at our disposal and are regularly recalibrated by calibration laboratories authorised by the WECC.

### Traceability of measuring devices to national standards.

An extensive range of equipment is available to conduct inspection monitoring of operating equipment. The measuring devices and measuring equipment are certified to be in compliance with national standards by means of regular external calibrations as well as in-house calibrations using reference standards and standard measuring devices.

Als Ansprechpartner dient Ihnen die gesamte Vertriebsorganisation des Firmenverbundes EMUGE-FRANKEN ([www.emuge-franken.com/vertrieb](http://www.emuge-franken.com/vertrieb)).

For more information please contact the sales organisation of the company association EMUGE-FRANKEN ([www.emuge-franken.com/sales](http://www.emuge-franken.com/sales)).





## Akkreditierung



Die Deutsche Akkreditierungsstelle bestätigt mit dieser **Akkreditierungsurkunde**, dass das Kalibrierlaboratorium

**DECOM-UGK Werkzeugtechnik GmbH**  
**Nürnberger Straße 96 – 100, 91207 Lauf a. d. Pegnitz**

die Mindestanforderungen gemäß DIN EN ISO/IEC 17025:2018 für die in der Anlage zu dieser Urkunde aufgeführten Konformitätsbewertungstätigkeiten erfüllt.  
Dies schließt zusätzliche bestehende gesetzliche und normative Anforderungen ein, einschließlich solcher in relevanten sektoralen Programmen.

Die Anforderungen an das Managementsystem in der DIN EN ISO/IEC 17025 sind in einer für Kalibrierlaboratorien relevanten Sprache verfasst und stehen insgesamt in Übereinstimmung mit den Prinzipien der DIN EN ISO 9001.

Diese Akkreditierung wurde gemäß Art. 5 Abs. 1 Satz 2 VO (EG) 765/2008, nach Durchführung eines Akkreditierungsverfahrens unter Beachtung der Mindestanforderungen der DIN EN ISO/IEC 17011 und auf Grundlage einer Bewertung und Entscheidung durch den eingesetzten Akkreditierungsausschuss ausgestellt.

Diese Akkreditierungsurkunde gilt nur in Verbindung mit dem Bescheid vom 30.12.2022 mit der Akkreditierungsnummer D-K-17567-01.  
Sie besteht aus diesem Deckblatt, der Rückseite des Deckblatts und der folgenden Anlage mit insgesamt 3 Seiten.

Registrierungsnummer der Akkreditierungsurkunde: D-K-17567-01-00

Berlin, 30.12.2022 Im Auftrag Dr. Florian Witt  
Fachbereichsleitung

Diese Urkunde gibt den Stand zum Zeitpunkt des Ausstellungsdatums wieder. Der jeweils aktuelle Stand der gültigen und überwachten Akkreditierung ist der Datenbank akkreditierter Stellen der Deutschen Akkreditierungsstelle zu entnehmen ([www.dakks.de](http://www.dakks.de)).

Siehe Hinweise auf der Rückseite



## Deutsche Akkreditierungsstelle

Anlage zur Akkreditierungsurkunde D-K-17567-01-00  
nach DIN EN ISO/IEC 17025:2018

Gültig ab: 30.12.2022

Ausstellungsdatum: 30.12.2022

Inhaber der Akkreditierungsurkunde:

**DECOM-UGK Werkzeugtechnik GmbH**  
**Nürnberger Straße 96 – 100, 91207 Lauf a. d. Pegnitz**

Das Kalibrierlaboratorium erfüllt die Mindestanforderungen gemäß DIN EN ISO/IEC 17025:2018 und gegebenenfalls zusätzliche gesetzliche und normative Anforderungen, einschließlich solcher in relevanten sektoralen Programmen, um die nachfolgend aufgeführten Konformitätsbewertungstätigkeiten durchzuführen.

Die Anforderungen an das Managementsystem in der DIN EN ISO/IEC 17025 sind in einer für Kalibrierlaboratorien relevanten Sprache verfasst und stehen insgesamt in Übereinstimmung mit den Prinzipien der DIN EN ISO 9001.

Kalibrierungen in den Bereichen:

## Dimensionelle Messgrößen

## Länge

- Gewinde
- Längenmessmittel
- Durchmesser
- Formabweichung

Diese Urkundenanlage gilt nur zusammen mit der schriftlich erteilten Urkunde und gibt den Stand zum Zeitpunkt des Ausstellungsdatums wieder. Der jeweils aktuelle Stand der gültigen und überwachten Akkreditierung ist der Datenbank akkreditierter Stellen der Deutschen Akkreditierungsstelle zu entnehmen ([www.dakks.de](http://www.dakks.de)).

Verwendete Abkürzungen: siehe letzte Seite

Seite 1 von 3



## Anlage zur Akkreditierungsurkunde D-K-17567-01-00

## Permanentes Laboratorium

| Messgröße /<br>Kalibriergegenstand                                                                                                                                        | Kalibrier- und<br>Messbereich /<br>Messspanne | Messbedingungen /<br>Verfahren                                                                                                                                              | Erweiterte<br>Messunsicherheit                                         | Bemerkungen                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------|
| <b>Länge</b><br>Gewindelehren<br>(ein- und mehrgängige<br>zylindrische Außen- und<br>Innenprofile mit geraden<br>Flanken, symmetrischem<br>und unsymmetrischem<br>Profil) |                                               |                                                                                                                                                                             |                                                                        |                                       |
| Außengewinde<br>Flankendurchmesser                                                                                                                                        | Nennndurchmesser<br>1 mm bis 300 mm           | EURAMET/cg-10/v.2.1,<br>VDI/VDE/DGQ 2618<br>Blatt 4.8:2006<br>Dreidrahtmethode<br>(senkrecht zur Gewinde-<br>achse) und Zweidraht-<br>methode (geneigt zur<br>Gewindeachse) | 2,5 µm                                                                 |                                       |
| Außendurchmesser                                                                                                                                                          |                                               |                                                                                                                                                                             | 2 µm                                                                   |                                       |
| Kerndurchmesser bzw.<br>Einsteichdurchmesser                                                                                                                              |                                               |                                                                                                                                                                             | 5 µm                                                                   |                                       |
| Steigung bzw. Teilung                                                                                                                                                     | 0,2 mm bis 12 mm                              |                                                                                                                                                                             | 1 µm                                                                   |                                       |
| Flankenwinkel                                                                                                                                                             | ≥ 3°                                          |                                                                                                                                                                             | (1,2 + 1 mm / l)°, jedoch<br>nicht kleiner als 3°                      | l = Flankenlänge                      |
| Innengewinde<br>Flankendurchmesser                                                                                                                                        | Nennndurchmesser<br>3 mm bis 300 mm           | EURAMET/cg-10/v.2.1,<br>VDI/VDE/DGQ 2618<br>Blatt 4.9:2006<br>Zweidrahtmethode<br>(senkrecht und geneigt<br>zur Gewindeachse)                                               | 2,5 µm                                                                 |                                       |
| Außendurchmesser bzw.<br>Einsteichdurchmesser                                                                                                                             |                                               |                                                                                                                                                                             | 7 µm                                                                   |                                       |
| Kerndurchmesser                                                                                                                                                           |                                               |                                                                                                                                                                             | 3,5 µm                                                                 |                                       |
| Steigung bzw. Teilung                                                                                                                                                     | 0,5 mm bis 12 mm                              |                                                                                                                                                                             | 1 µm                                                                   |                                       |
| Flankenwinkel                                                                                                                                                             | ≥ 3°                                          |                                                                                                                                                                             | (1,2 + 3 mm / l)°, jedoch<br>nicht kleiner als 3°                      |                                       |
| Messuhren<br>mit Skalenanzeige                                                                                                                                            | bis 30 mm                                     | VDI/VDE/DGQ/DKD 2618<br>Blatt 11.1:2021                                                                                                                                     | 3 µm + 10 · 10 <sup>-4</sup> · l                                       | l = gemessene Länge                   |
| Feinzeiger                                                                                                                                                                | bis 3 mm                                      | VDI/VDE/DGQ 2618<br>Blatt 11.2:2002                                                                                                                                         | 0,9 µm                                                                 |                                       |
| Fühlhebelmessgeräte                                                                                                                                                       | bis 1,6 mm                                    | VDI/VDE/DGQ 2618<br>Blatt 11.3:2002                                                                                                                                         | 1,2 µm                                                                 |                                       |
| Bügelmessschrauben<br>(Messschrauben für<br>Außenmessung)                                                                                                                 | 0 mm bis 100 mm                               | VDI/VDE/DGQ 2618<br>Blatt 10.1:2001                                                                                                                                         | 3 µm + 10 · 10 <sup>-4</sup> · l                                       | 100 mm = Endwert<br>des Messbereiches |
| Messschleifer für Außen-,<br>Innen- und Tiefenmaße                                                                                                                        | 0 mm bis 300 mm<br>> 300 mm bis 1000 mm       | VDI/VDE/DGQ 2618<br>Blatt 9.1:2006                                                                                                                                          | 30 µm + 30 · 10 <sup>-4</sup> · l<br>50 µm + 30 · 10 <sup>-4</sup> · l | l = gemessene Länge                   |

Gültig ab: 30.12.2022  
Ausstellungsdatum: 30.12.2022

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## Anlage zur Akkreditierungsurkunde D-K-17567-01-00

## Permanentes Laboratorium

| Messgröße /<br>Kalibriergegenstand                       | Kalibrier- und<br>Messbereich /<br>Messspanne | Messbedingungen /<br>Verfahren              | Erweiterte<br>Messunsicherheit                                         | Bemerkungen |
|----------------------------------------------------------|-----------------------------------------------|---------------------------------------------|------------------------------------------------------------------------|-------------|
| Tiefenmessschieber                                       | 0 mm bis 300 mm<br>> 300 mm bis 1000 mm       | VDI/VDE/DGQ 2618<br>Blatt 9.2:2006          | 30 µm + 30 · 10 <sup>-4</sup> · l<br>50 µm + 30 · 10 <sup>-4</sup> · l |             |
| Zylindrische Einstellnormale<br>Lehrringe<br>Durchmesser | 5 mm bis 100 mm                               | VDI/VDE/DGQ 2618<br>Blatt 4.1:2006 Option 2 | 0,6 µm                                                                 |             |
| Rundheitsabweichung                                      | bis 40 µm                                     |                                             | 0,2 µm                                                                 |             |
| Lehrdorne<br>Durchmesser                                 | 3 mm bis 100 mm                               |                                             | 0,6 µm                                                                 |             |
| Rundheitsabweichung                                      | bis 40 µm                                     |                                             | 0,2 µm                                                                 |             |
| Prüfstifte<br>Durchmesser                                | 3 mm bis 20 mm                                | VDI/VDE/DGQ 2618<br>Blatt 4.2:2007 Option 2 | 0,6 µm                                                                 |             |
| Rundheitsabweichung                                      | bis 40 µm                                     |                                             | 0,2 µm                                                                 |             |

## Verwendete Abkürzungen:

|         |                                                                             |
|---------|-----------------------------------------------------------------------------|
| CMC     | Calibration and measurement capabilities (Kalibrier- und Messmöglichkeiten) |
| DIN     | Deutsches Institut für Normung e.V.                                         |
| DGQ     | Deutsche Gesellschaft für Qualität e.V.                                     |
| DKD     | Deutscher Kalibrierdienst                                                   |
| EURAMET | European Association of National Metrology Institutes                       |
| VDE     | Verband der Elektrotechnik, Elektronik und Informationstechnik e.V.         |
| VDI     | Verein Deutscher Ingenieure e.V.                                            |

Gültig ab: 30.12.2022  
Ausstellungsdatum: 30.12.2022

Seite 3 von 3

### Überwachungsprüfung nach VDI/VDE/DGQ-Richtlinie 2618, Blatt 4.8 „Ü“

- Reinigen
- Entmagnetisieren
- Sichtprüfung auf Beschädigung
- Nacharbeit leichter Beschädigungen mit Ölstein oder Läppleinen
- Kennzeichnung feststellen, evtl. Ident-Nummer festlegen und aufbringen
- Temperieren (min. 5 Stunden)
- Sichtprüfung der korrekten Kennzeichnung, ggf. Farbkennzeichnung
- Kennwertermittlung: Flankendurchmesser am Gewindeanfang an 2 Messstellen um 90° versetzt
- Auswertung der Messergebnisse und Erstellung des Kalibrierscheines
- Konservierung und Stückverpackung

Alle erforderlichen Daten und Messergebnisse werden in einem Kalibrierschein (siehe Muster) dokumentiert.

### Inspection monitoring according to VDI/VDE/DGQ-directive 2618, sheet 4.8 “Ü”

- Cleaning
- Demagnetizing
- Visual inspection for damage
- Rework of minor damages with oil stone and lapping cloth
- Determine marking, if applicable, establish ID number and apply marking
- Tempering (min. 5 hours)
- Visual inspection for correct marking, if applicable colour marking.
- Determination of specific values: pitch diameter at the start of the thread on 2 measuring locations off-set by 90°.
- Evaluation of measuring results and creation of calibration certificate
- Preservation and single packaging

All necessary data and measuring results will be documented in a calibration certificate (see sample).

**Decom UGK GmbH**  
Nürnberger Str. 96-100  
D-91207 Lauf a.d. Pegnitz

**Werks-Kalibrierschein**  
**Proprietary Calibration-Certificate**

Gegenstand  
Object: Gewinde-Grenzlehrdorn

Hersteller  
Manufacturer: EMUGE

Type  
Type: M 18x2.5-6H

Fabrikat-/Serien-Nr.  
Serial Number: 0916

Auftraggeber  
Customer: Musterkunde  
Musterstraße 10  
9999 Musterstadt

Auftragsnummer  
Work order No.: 123456789

Anzahl der Seiten des Kalibrierscheines  
Number of pages of the certificate: 2

Datum der Kalibrierung  
Date of calibration: 31.01.2018

Prüfer  
Inspector: S. Göbel

Dieser Kalibrierschein darf nur vollständig und unverändert weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung der ausstellenden Firma. Dieser Kalibrierschein wurde per EDV erstellt und ist ohne Unterschrift gültig.

This calibration certificate may not be reproduced other than in full except with the permission of the issuing company. This calibration certificate was made by electronic data processing and is legal without signature.

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91207 Lauf a.d. Pegnitz  
Tel: +49(0)9123 188 200  
Fax: +49(0)9123 188 401  
info@decom-ugk.de  
www.decom-ugk.de

Geschäftsführer:  
Ulrich Gimpel-Kriesseder  
Peter Ludwig  
AG Nürnberg HRB 9730

Sparkasse Nürnberg  
SWIFT-BIC: 53000000  
IBAN: DE33 700501010012738081

USt-Ident.Nr.:  
DE 133 541 419

Prüfmitteltyp : Gewinde-Grenzlehrdorn

**Sollmaße und Toleranzen**

|                                      |                        |
|--------------------------------------|------------------------|
| Flankendurchmesser, Gutseite, neu    | 16,3920 mm ± 0,0070 mm |
| Flankendurchmesser, Gutseite, abgn.  | 16,3710 mm             |
| Flankendurchmesser, Ausschuss, neu   | 16,6070 mm ± 0,0070 mm |
| Flankendurchmesser, Ausschuss, abgn. | 16,5920 mm             |

**Ergebnisse**

| Pos. | Messwerte                    | Abweichung  | außerhalb der Toleranz |
|------|------------------------------|-------------|------------------------|
| A1   | Gutseite<br>16,3901 mm       | - 0,0019 mm |                        |
| B1   | 16,3912 mm                   | - 0,0008 mm |                        |
| A1   | Ausschussseite<br>16,6078 mm | + 0,0008 mm |                        |
| B1   | 16,6072 mm                   | + 0,0002 mm |                        |

Messdraht : 1,4665 mm

**7 Bemerkung**

**8 Prüferscheid**  
Prüfmittel hält die Spezifikationen ein.

**9 Prüfgerät**  
ULM 450 Nr. 5382; Dreidrahtmethode

**10 Anschluss ans nationales Normal**  
Lehrdorm.metas.111-12802

**11 Messunsicherheit (P=95%)**  
U = (2,50 + L x 1,25) µm, L in m

**12 Prüfanweisung**  
VDI/VDE/DGQ 2618 Bl. 4.8 "Ü" bzw. PA von DECOM-UGK

Für die Einhaltung einer angemessenen Frist zur Rekalibrierung ist der Benutzer verantwortlich. Messergebnisse außerhalb der zulässigen, jedoch innerhalb der um die Messunsicherheit erweiterten Grenzwerte werden nicht zurückgewiesen und als in Ordnung beurteilt (DIN EN ISO 14253-1).

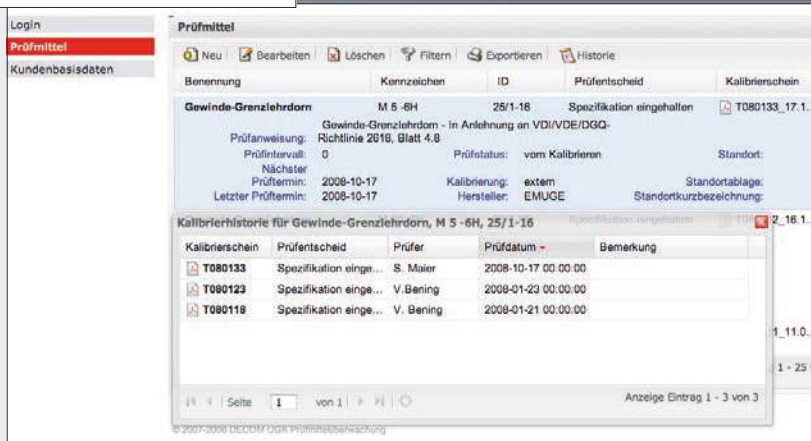
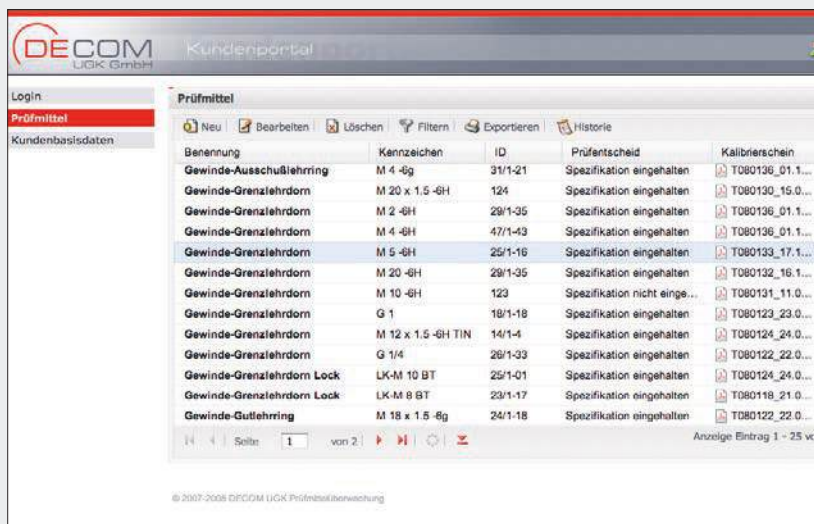
- Kalibrierschein-Nr. zur eindeutigen Zuordnung der Kalibrierung  
Number of calibration certificate to clearly assign the calibration
- Messmittelhersteller  
Manufacturer of measuring device
- Eindeutige Ident-Nr. des Messmittels zur Zuordnung des Kalibrierscheines  
Unique ID number of measuring device for clear assignment to calibration certificate
- Name und Anschrift des Kunden  
Name and address of customer
- Auftragsnummer  
Order number
- Verantwortlicher Prüfer für den Prüferscheid  
Inspecting person responsible for the inspection decision

- Besondere Hinweise und Bemerkungen zum Messmittel  
Specific notes and remarks concerning the measuring device
- Besondere Hinweise und Bemerkungen zum Prüferscheid  
Specific notes and remarks concerning the inspection decision
- Für die Kalibrierung verwendetes Prüfgerät  
Measuring device used for the calibration
- Angabe des Bezugsnormales zur Rückführung des Messwertes  
Information on reference standard for traceability of measuring values
- Messunsicherheitsangabe  
Information on measurement uncertainty
- Angabe der Prüfanweisung  
Information on inspection directives



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Kunde<br>Customer                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Product<br>Finder          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | M                          |
| Aluminiumboxen mit Noppenschaum auf Wunsch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Transport<br>Transport                                                              | Aluminium boxes with napped foam upon request                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | MF                         |
| Bei entsprechenden Stückzahlen stellen wir Ihnen ausgepolsterte Leihbehälter in Form von verschließbaren Aluminiumboxen in unterschiedlichen Größen zur Verfügung.                                                                                                                                                                                                                                                                                                                                                                                          |    | For appropriate quantities, we can provide padded loan containers, that is to say, lockable aluminum boxes in different sizes.                                                                                                                                                                                                                                                                                                                                                                                                                                                               | UNC                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | UNF                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Rp, R, Rc                  |
| Reinigung, Sichtprüfung, Entmagnetisierung, Temperierung                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Wareneingang<br>Goods receipt                                                       | Cleaning, visual inspection, demagnetisation, tempering                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NPT, NPTF                  |
| Die Messmittel werden nach Anlieferung sichtkontrolliert, gereinigt, falls erforderlich entmagnetisiert und entsprechend der VDI/DKD-Richtlinien bei 20 °C ± 1 °C mindestens 5 Stunden temperiert. Alle Messmittel müssen mit einer eindeutigen Ident-Nr. gekennzeichnet sein, um die Kalibrierscheinzuordnung zu gewährleisten. Ist keine entsprechende Kennzeichnung auf dem Messmittel, wird bei der Kalibrierung die Ident-Nr. mittels eines Aufklebers angebracht. Gegen einen Aufpreis nehmen wir auch eine feste Kennzeichnung Ihrer Prüfmittel vor. |    | The measuring devices are visually checked after receipt, cleaned, if necessary demagnetised and tempered acc. to the VDI/DKD guidelines at 20 °C ± 1 °C for at least 5 hours. All measurement devices must be marked with a unique identification number in order to guarantee the clear allocation to its calibration certificate. If there is no corresponding marking on the measuring instrument, the identification number will be attached by means of a sticker during calibration. For a surcharge, we can also provide a permanent identification marking on your testing devices. | BSW                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Pg                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | MJ<br>UNJC, UNJF           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | EG (STI)                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SELF-LOCK                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Tr, Tr-F<br>Rd             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Glatt<br>Smooth            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | GT, TD                     |
| Kennwertermittlung, Funktionsprüfung, Auswertung, Anbringung von Prüfplaketten, Datenarchivierung online                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Kalibrierung<br>Calibration                                                         | Determination of key values, functional testing, evaluation, marking with inspection labels, data archiving online                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Zubehör<br>Accessories     |
| Die Kalibrierung der Messmittel erfolgt nach VDI/VDE/DGQ-Richtlinie 2618 ff. „Ü“ (Überwachungsprüfung). Messmittel, welche nicht den Spezifikationen entsprechen, werden mit einem „gesperrt“-Aufkleber versehen. Prüfplaketten werden auf Wunsch angebracht. Messmittelstammdaten und Kalibrierscheine werden auch in unserer Online-Datenbank abgelegt (Kalibrierscheinmuster siehe auch Seite 608).                                                                                                                                                      |  | The calibration of the measuring equipment is carried out according to VDI/VDE/DGQ guideline 2618 et seq. “Ü” (monitoring inspection). Measuring equipment that does not meet the specifications will be marked with a “blocked” sticker. Inspection stickers can be attached free of charge on request. Master data of measuring devices and calibration certificates are also stored in our online database (sample of calibration certificate see page 608).                                                                                                                              | PoCoSys                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Kalibrieren<br>Calibration |
| Kalibrierscheine, Konservierung, Schmelztauchen, Verpacken                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Warenausgang<br>Outgoing goods                                                      | Calibration certificates, preservation, hot dipping, packaging                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                            |
| Die kalibrierten Messmittel werden durch Einölen oder mittels Vaseline konserviert und sachgemäß verpackt bzw. in Schmelzmasse getaucht. Die stoßgeschützte Verpackung erfolgt direkt im Versandraum des Kalibrierlabors. Kalibrierscheine können in Papierform, als PDF per E-Mail oder direkt online über KalimeroNet zur Verfügung gestellt werden.                                                                                                                                                                                                      |  | The calibrated measuring devices are preserved with oil or petroleum jelly and properly packaged respectively treated in a hot-dip procedure. The measuring devices are packaged shock-proof directly in the shipment preparation room of the calibration laboratory. Calibration certificates can be provided on paper, as PDF file by e-mail or directly online via KalimeroNet.                                                                                                                                                                                                           |                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                            |
| Direkter Versand über die Firma EMUGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Versand<br>Shipping                                                                 | Direct shipping by company EMUGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Kunde<br>Customer                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                            |





## KalimeroNet – einfachste Bedienung – Kalibrierscheine weltweit online verfügbar – keine Software-Installation

Welche Funktionen beinhaltet KalimeroNet?

- Kalibrierscheine sind direkt abrufbar und als PDF hinterlegt
- Erfassung eigener Kundenbasisdaten wie Standorte und Lagerorte
- Prüf- und Kalibrieranweisungen können als Dateianhang verwaltet werden und lassen sich dem Prüfmittel zuordnen
- Zugriff auf alle bisherigen Kalibrierungen in der Historienübersicht
- Datenexport in Microsoft® Excel® für eigene Ausdrücke
- Umfangreiche Sortier- und Filterfunktionen verschaffen den gewünschten Überblick wie z.B. Prüffälligkeiten
- Verwaltung eigenkalibrierter Messmittel mit Kalibrierschein als Dateianhang möglich
- Vergabe von Nutzerprofilen durch DECOM UGK ist möglich

## Wie kann ich die Leistungen von KalimeroNet nutzen?

Sie benötigen einen Internetzugang. Die Nutzung von KalimeroNet über unser Kundenportal steht ausschließlich DECOM UGK Kunden zur Verfügung. Die Nutzung ist unentgeltlich.

## Wie bekomme ich meine persönlichen Daten für die Kundenportal-Registrierung?

Sie müssen sich einmalig über das Online-Formular mit Ihren Anmeldedaten registrieren. Das Passwort kann nachträglich von Ihnen geändert werden.

Unter [www.decom-ugk.de/user/login](http://www.decom-ugk.de/user/login) können Sie sich über unseren Gastzugang von der einfachen Bedienung überzeugen. Alternativ können Sie eine Kurzbeschreibung zu KalimeroNet von unserer Internetseite unter [www.decom-ugk.de/hp/download](http://www.decom-ugk.de/hp/download) herunterladen.

## KalimeroNet – easiest handling – calibration sheets available online worldwide – no software installation necessary

Which functions does KalimeroNet offer you?

- Calibration sheets can be called off directly, and are filed in PDF format
- Registration of proper customer data, like location and storage location is possible
- Inspection and calibration instructions can be administrated as file attachments, and allocated to individual inspection tools
- Access to all past calibrations in the history file
- Data export in Microsoft® Excel® for your own printout
- Comprehensive sorting and filter functions provide full control, e.g. of due inspection dates
- Administration of self-calibrated measuring tools with calibration sheet as file attachment is possible
- User profiles can be provided by DECOM UGK

## How can I use the advantages of KalimeroNet?

All you need is an Internet access. The use of KalimeroNet through our customer portal is available only to DECOM UGK customers. The use of KalimeroNet is free of charge.

## How do I get my personal data for registration in the customer portal?

You have to register one time only through our online form with your customer data. You can change your password subsequently. Under our guest log-in, [www.decom-ugk.de/user/login](http://www.decom-ugk.de/user/login) you can convince yourself of the easy handling of KalimeroNet. As an alternative, you can download a brief description of KalimeroNet from our Internet website under [www.decom-ugk.de/hp/download](http://www.decom-ugk.de/hp/download).



## Aufnahmen und Gewindeschneidapparate Tap Holders and Tapping Attachments

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| Product<br>Finder             | Kühlung und Schmierung<br>Cooling and lubrication                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  | Funktionen<br>Functions                                                             |                                                                                             |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
|-------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------|
| Soft-<br>synchro              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |                                                                                             |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| Speed-<br>synchro             |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |                                                                                             |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| KSN                           |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |                                                                                             |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| MQL<br>MMS                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |                                                                                             |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| SFM                           |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |                                                                                             |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| SWITCH-<br>MASTER             |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |                                                                                             |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| HF                            |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |                                                                                             |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| EM                            |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |                                                                                             |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| Zubehör<br>Accessories        |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |                                                                                             |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
|                               | Innere Kühlschmierstoff-Zufuhr (IKZ)<br>Internal coolant supply (IKZ)               | Minimalmengenschmierung (MMS)<br>Minimum-quantity lubrication (MQL)                 |                                                                                     |                                                                                     |                                                                                     | Kühlschmierstoff-Druck am Futtereintritt<br>Coolant-lubricant pressure at the entry to the holder |                                                                                     |                                                                                     |                                                                                      |  | Luftdruck am Futtereintritt<br>Air pressure at the entry to the holder              | Längenausgleich in Druck- und Zugrichtung<br>Length compensation on compression and tension | Minimallängenausgleich<br>Cooling and lubrication                                   | Längenausgleich in Zugrichtung<br>Length compensation on tension                      | Längennachstellung 2 mm<br>Length readjustment 2 mm                                   | Längennachstellung<br>Length readjustment                                             | Druckpunktmechanismus<br>Pressure-point mechanism |
|                               |    |    | MQL 1                                                                               | MQL 2                                                                               | p <sub>max</sub><br>50 bar<br>(700 psi)                                             | p <sub>max</sub><br>70 bar<br>(1000 psi)                                                          | p <sub>max</sub><br>100 bar<br>(1400 psi)                                           | p <sub>max</sub><br>6 bar<br>(85 psi)                                               | p <sub>max</sub><br>10 bar<br>(140 psi)                                              |  |  |          |  |    |    |    |                                                   |
| Softsynchro® Micro            |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |          |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| Softsynchro® 0-5              |    |                                                                                     |                                                                                     |                                                                                     |    |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |          |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| Softsynchro® 6                |    |                                                                                     |                                                                                     |                                                                                     |    |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |          |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| Softsynchro® Modular/IKZ      |    |                                                                                     |                                                                                     |                                                                                     |    |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |          |                                                                                     |    |                                                                                       |                                                                                       |                                                   |
| Softsynchro® Slim/IKZ         |    |                                                                                     |                                                                                     |                                                                                     |    |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |          |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| Softsynchro® Xtension         |  |                                                                                     |                                                                                     |                                                                                     |  |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |  |                                                                                       |                                                   |
| Softsynchro® QuickLock        |  |                                                                                     |                                                                                     |                                                                                     |  |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| Softsynchro® SnapLock         |  |                                                                                     |                                                                                     |                                                                                     |  |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| Softsynchro® SnapLock L       |  |                                                                                     |                                                                                     |                                                                                     |  |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |  |                                                                                       |                                                   |
| Softsynchro®/PGR              |  |                                                                                     |                                                                                     |                                                                                     |  |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| Softsynchro® Modular/MQL      |                                                                                     |  |  |  |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |  |  |                                                                                     |        |                                                                                     |                                                                                       |  |                                                                                       |                                                   |
| Softsynchro® Slim/MQL         |                                                                                     |  |  |  |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |  |  |                                                                                     |        |                                                                                     |                                                                                       |  |                                                                                       |                                                   |
| Softsynchro® Xtension/MQL     |                                                                                     |  |  |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |  |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |  |  |                                                   |
| Softsynchro®/MMS              |                                                                                     |  |  |  |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |   |  |                                                                                     |        |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| Speedsynchro® Modular NFC/IKZ |  |                                                                                     |                                                                                     |                                                                                     |  |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| Speedsynchro® Modular NFC/MQL |                                                                                     |  |  |  |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |  |  |                                                                                     |        |                                                                                     |                                                                                       |  |                                                                                       |                                                   |
| Speedsynchro® Mini            |  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| KSN                           |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |                                                                                       |  |                                                   |
| KSN/HD                        |  |                                                                                     |                                                                                     |                                                                                     |  |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |                                                                                       |  |                                                   |
| KSN/HD/ER                     |  |                                                                                     |                                                                                     |                                                                                     |  |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |                                                                                       |  |                                                   |
| KSN/HD/PGR                    |  |                                                                                     |                                                                                     |                                                                                     |  |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |                                                                                       |  |                                                   |
| KSN/Synchro                   |  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |  |                                                                                     |                                                                                      |  |                                                                                     |                                                                                             |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| KSN/MQL                       |                                                                                     |  |  |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |  |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |                                                                                       |  |                                                   |
| SFM                           |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |                                                                                             |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| SFM-NP                        |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |                                                                                             |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| SFM-L-DZ                      |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |                                                                                       |  |                                                   |
| SWITCH-MASTER                 |  |                                                                                     |                                                                                     |                                                                                     |  |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |                                                                                             |                                                                                     |  |                                                                                       |                                                                                       |                                                   |
| HF                            |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |
| HF/HD/Spezial                 |  |                                                                                     |                                                                                     |                                                                                     |  |                                                                                                   |                                                                                     |                                                                                     |                                                                                      |  |                                                                                     |        |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                   |

| Funktionen<br>Functions                                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 |                                                                                                        |                                                                                   |                                                                                                      | Werkzeug-Adaptierung<br>Tool adaptation                                                   |                                                                                                                                 | Empfohlene Einsatzgebiete<br>Recommended range of application                                                |                                                                        | Product<br>Finder             |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-------------------------------|
| Zugausrastung<br>Front release                                                   | Achsparallele Pendelung<br>Axial-parallel floating                                | Nahfeldkommunikation<br>Near field communication                                  | Übersetzung ins Schnelle<br>Transmission gearing rapid traverse                   | Wendegetriebe<br>Reverse gear                                                     | Überlastkupplung<br>Overload clutch                                               | Bohren und Senken<br>Drilling and countersinking                                  | Werkzeugadaptierung über Schnellwechsel-Einsätze, Typenreihe EM<br>Tool adaptation by means of quick-change adapters, EM series | Werkzeugadaptierung über Schnellwechsel-Einsätze, Typenreihe HE<br>Tool adaptation by means of quick-change adapters, HE series | Werkzeugadaptierung über Spannzangen, Typ ER (GB)<br>Tool adaptation by means of collets, type ER (GB) | Werkzeugadaptierung über SnapLock-Nut<br>Tool adaptation by SnapLock groove       | Werkzeugadaptierung über Spannzangen, Typ PGR-GB<br>Tool adaptation by means of collets, type PGR-GB | Einsatz auf Maschinen mit Synchronspindel<br>For use on machines with synchronous spindle | Einsatz auf CNC-Bearbeitungszentren und sonstigen Werkzeugmaschinen<br>For use on CNC machining centres and other machine tools | Einsatz auf Mehrspindelmaschinen und Transferstraßen<br>For use on multi-spindle machines and transfer lines | Einsatz auf Säulenbohrmaschinen<br>For use on pillar drilling machines |                               |
|  |  |  |  |  |  |  |                                                |                                                |                       |  |                     | Einsatz auf Maschinen mit Synchronspindel<br>For use on machines with synchronous spindle | Einsatz auf CNC-Bearbeitungszentren und sonstigen Werkzeugmaschinen<br>For use on CNC machining centres and other machine tools | Einsatz auf Mehrspindelmaschinen und Transferstraßen<br>For use on multi-spindle machines and transfer lines | Einsatz auf Säulenbohrmaschinen<br>For use on pillar drilling machines |                               |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 | ■                                                                                                      |                                                                                   |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        |                               |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 | ■                                                                                                      |                                                                                   |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Softsynchro® Micro            |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 |                                                                                                        |                                                                                   |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Softsynchro® 0-5              |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 | ■                                                                                                                               |                                                                                                        |                                                                                   |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Softsynchro® 6                |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 | ■                                                                                                      |                                                                                   |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Softsynchro® Modular/IKZ      |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 | ■                                                                                                      |                                                                                   |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Softsynchro® Slim/IKZ         |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 | ■                                                                                                      |                                                                                   |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Softsynchro® Xtension         |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ■                                                                                                                               |                                                                                                                                 |                                                                                                        |                                                                                   |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Softsynchro® QuickLock        |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 |                                                                                                        | ■                                                                                 |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Softsynchro® SnapLock         |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 |                                                                                                        | ■                                                                                 |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Softsynchro® SnapLock L       |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 |                                                                                                        |                                                                                   | ■                                                                                                    | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Softsynchro®/PGR              |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 | ■                                                                                                      |                                                                                   |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Softsynchro® Modular/MQL      |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 | ■                                                                                                      |                                                                                   |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Softsynchro® Slim/MQL         |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 | ■                                                                                                      |                                                                                   |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Softsynchro® Xtension/MQL     |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 | ■                                                                                                      |                                                                                   |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Softsynchro®/MMS              |
|                                                                                  |                                                                                   | ■                                                                                 | ■                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 | ■                                                                                                      |                                                                                   |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Speedsynchro® Modular NFC/IKZ |
|                                                                                  |                                                                                   | ■                                                                                 | ■                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 | ■                                                                                                      |                                                                                   |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Speedsynchro® Modular NFC/MQL |
|                                                                                  |                                                                                   | ■                                                                                 | ■                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 | ■                                                                                                      |                                                                                   |                                                                                                      | ■                                                                                         |                                                                                                                                 |                                                                                                              |                                                                        | Speedsynchro® Mini            |
| ■                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ■                                                                                                                               |                                                                                                                                 |                                                                                                        |                                                                                   |                                                                                                      |                                                                                           | ■                                                                                                                               |                                                                                                              | ■                                                                      | KSN                           |
| ■                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ■                                                                                                                               |                                                                                                                                 |                                                                                                        |                                                                                   |                                                                                                      |                                                                                           | ■                                                                                                                               |                                                                                                              |                                                                        | KSN/HD                        |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 | ■                                                                                                      |                                                                                   |                                                                                                      |                                                                                           | ■                                                                                                                               |                                                                                                              |                                                                        | KSN/HD/ER                     |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 |                                                                                                        |                                                                                   | ■                                                                                                    |                                                                                           | ■                                                                                                                               |                                                                                                              |                                                                        | KSN/HD/PGR                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 | ■                                                                                                      |                                                                                   |                                                                                                      |                                                                                           |                                                                                                                                 |                                                                                                              |                                                                        | KSN/Synchro                   |
| ■                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ■                                                                                                                               |                                                                                                                                 |                                                                                                        |                                                                                   |                                                                                                      |                                                                                           | ■                                                                                                                               |                                                                                                              |                                                                        | KSN/MQL                       |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ■                                                                                                                               |                                                                                                                                 |                                                                                                        |                                                                                   |                                                                                                      |                                                                                           |                                                                                                                                 | ■                                                                                                            |                                                                        | SFM                           |
|                                                                                  | ■                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ■                                                                                                                               |                                                                                                                                 |                                                                                                        |                                                                                   |                                                                                                      |                                                                                           |                                                                                                                                 | ■                                                                                                            |                                                                        | SFM-NP                        |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ■                                                                                                                               |                                                                                                                                 |                                                                                                        |                                                                                   |                                                                                                      |                                                                                           |                                                                                                                                 | ■                                                                                                            |                                                                        | SFM-L-DZ                      |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   | ■                                                                                 |                                                                                   |                                                                                   |                                                                                                                                 |                                                                                                                                 | ■                                                                                                      |                                                                                   |                                                                                                      | ■                                                                                         | ■                                                                                                                               |                                                                                                              |                                                                        | SWITCH-MASTER                 |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ■                                                                                 | ■                                                                                 |                                                                                                                                 | ■                                                                                                                               |                                                                                                        |                                                                                   |                                                                                                      |                                                                                           | ■                                                                                                                               |                                                                                                              | ■                                                                      | HF                            |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                 | ■                                                                                                                               |                                                                                                        |                                                                                   |                                                                                                      |                                                                                           | ■                                                                                                                               |                                                                                                              |                                                                        | HF/HD/Spezial                 |



| Product<br>Finder      |                               | Kegel-Hohlschäfte<br>Hollow taper shanks |           | Polygonschaft<br>Polygon shank | Zylinderschäfte<br>Straight shanks |           |     | Form ER<br>Form ER |
|------------------------|-------------------------------|------------------------------------------|-----------|--------------------------------|------------------------------------|-----------|-----|--------------------|
| Soft-<br>synchro       |                               |                                          |           |                                |                                    |           |     |                    |
| Speed-<br>synchro      |                               |                                          |           |                                |                                    |           |     |                    |
| KSN                    |                               |                                          |           |                                |                                    |           |     |                    |
| MQL<br>MMS             |                               |                                          |           |                                |                                    |           |     |                    |
| SFM                    |                               |                                          |           |                                |                                    |           |     |                    |
| SWITCH-<br>MASTER      |                               | Seite · Page                             |           |                                |                                    |           |     |                    |
| HF                     | Softsynchro® Micro            | 618                                      |           |                                | 626                                |           | 624 | 627                |
| EM                     | Softsynchro® 0-5              | 619 - 620                                | 622       | 623                            |                                    |           | 625 |                    |
|                        | Softsynchro® 6                | 621                                      |           |                                |                                    |           |     |                    |
| Zubehör<br>Accessories | Softsynchro® Modular/IKZ      | 632                                      |           |                                |                                    |           |     |                    |
|                        | Softsynchro® Slim/IKZ         | 634                                      |           |                                |                                    |           |     |                    |
|                        | Softsynchro® Xtension         | 635                                      |           |                                |                                    |           |     |                    |
|                        | Softsynchro® QuickLock        | 636                                      |           |                                |                                    |           | 637 |                    |
|                        | Softsynchro® SnapLock         | 639                                      |           |                                |                                    |           | 640 |                    |
|                        | Softsynchro® SnapLock L       | 641                                      |           |                                |                                    |           | 642 |                    |
|                        | Softsynchro®/PGR              | 643                                      |           |                                |                                    |           | 644 |                    |
|                        | Softsynchro® Modular/MQL      | 678 - 681                                | 682 - 683 |                                |                                    |           |     |                    |
|                        | Softsynchro® Slim/MQL         | 684 - 687                                |           |                                |                                    |           |     |                    |
|                        | Softsynchro® Xtension/MQL     | 688                                      |           |                                |                                    |           |     |                    |
|                        | Softsynchro®/MMS              | 689 - 690                                | 691       |                                |                                    |           |     |                    |
|                        | Speedsynchro® Modular NFC/IKZ |                                          |           |                                |                                    | 647       |     |                    |
|                        | Speedsynchro® Modular NFC/MQL |                                          |           |                                |                                    |           |     |                    |
|                        | Speedsynchro® Mini            |                                          |           |                                |                                    |           |     |                    |
|                        | KSN                           | 652                                      | 653       |                                |                                    |           | 654 |                    |
|                        | KSN/HD                        | 662                                      | 663       | 664                            |                                    |           | 665 |                    |
|                        | KSN/HD/ER                     | 670                                      | 671       |                                |                                    |           | 672 |                    |
|                        | KSN/HD/PGR                    | 673                                      |           |                                |                                    |           | 674 |                    |
|                        | KSN/Synchro                   | 675                                      |           |                                |                                    |           | 676 |                    |
|                        | KSN/MQL                       | 694                                      | 695       |                                |                                    |           |     |                    |
|                        | SFM                           |                                          |           |                                |                                    |           |     |                    |
|                        | SFM-NP                        |                                          |           |                                |                                    |           |     |                    |
|                        | SFM-L-DZ                      |                                          |           |                                |                                    |           |     |                    |
|                        | SWITCH-MASTER                 |                                          |           |                                |                                    | 706 - 707 |     |                    |
|                        | HF                            |                                          |           |                                |                                    |           |     |                    |
|                        | HF/HD/Spezial                 |                                          |           |                                |                                    |           |     |                    |



| Steilkegelschäfte<br>ISO taper shanks                                            |                                                                                   |                                                                                   | Morsekegelschaft<br>Morse taper shank                                             | StellhülSENSchaft<br>Cylindrical shank                                            | VDI-Schaft<br>VDI shank                                                           | ABS®-Kupplung<br>ABS®-clutch                                                       |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  |  |  |  |  |  |  |
| <b>DIN ISO 7388-1<br/>SK</b>                                                     | <b>DIN 2080-1<br/>SK</b>                                                          | <b>DIN ISO 7388-2<br/>BT</b>                                                      | <b>DIN 228-1<br/>Form B</b>                                                       | <b>DIN 6327-3<br/>Tr</b>                                                          | <b>DIN ISO 10889-1<br/>VDI</b>                                                    | <b>ABS®<br/>(System KOMET)</b>                                                     |

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|           |           |           |           |     |     |          |                                      |
|-----------|-----------|-----------|-----------|-----|-----|----------|--------------------------------------|
|           |           |           |           |     |     |          | <b>Softsynchro® Micro</b>            |
| 628 - 629 |           | 631       |           |     |     |          | <b>Softsynchro® 0-5</b>              |
| 630       |           |           |           |     |     |          | <b>Softsynchro® 6</b>                |
|           |           | 633       |           |     |     |          | <b>Softsynchro® Modular/IKZ</b>      |
|           |           |           |           |     |     |          | <b>Softsynchro® Slim/IKZ</b>         |
|           |           |           |           |     |     |          | <b>Softsynchro® Xtension</b>         |
|           |           | 638       |           |     |     |          | <b>Softsynchro® QuickLock</b>        |
|           |           |           |           |     |     |          | <b>Softsynchro® SnapLock</b>         |
|           |           |           |           |     |     |          | <b>Softsynchro® SnapLock L</b>       |
|           |           |           |           |     |     |          | <b>Softsynchro®/PGR</b>              |
|           |           |           |           |     |     |          | <b>Softsynchro® Modular/MQL</b>      |
|           |           |           |           |     |     |          | <b>Softsynchro® Slim/MQL</b>         |
|           |           |           |           |     |     |          | <b>Softsynchro® Xtension/MQL</b>     |
|           |           |           |           |     |     |          | <b>Softsynchro®/MMS</b>              |
|           |           |           |           |     |     | 646      | <b>Speedsynchro® Modular NFC/IKZ</b> |
|           |           |           |           |     |     | 648, 693 | <b>Speedsynchro® Modular NFC/MQL</b> |
|           |           | 649       |           |     |     |          | <b>Speedsynchro® Mini</b>            |
| 655       | 656       | 657       | 658       | 659 | 660 | 661      | <b>KSN</b>                           |
| 666       |           |           |           | 667 | 668 | 669      | <b>KSN/HD</b>                        |
|           |           |           |           |     |     |          | <b>KSN/HD/ER</b>                     |
|           |           |           |           |     |     |          | <b>KSN/HD/PGR</b>                    |
|           |           |           |           |     |     |          | <b>KSN/Synchro</b>                   |
|           |           |           |           |     |     |          | <b>KSN/MQL</b>                       |
|           |           |           | 700       | 701 |     |          | <b>SFM</b>                           |
|           |           |           |           | 702 |     |          | <b>SFM-NP</b>                        |
|           |           |           | 703       | 704 |     |          | <b>SFM-L-DZ</b>                      |
|           |           |           |           |     |     |          | <b>SWITCH-MASTER</b>                 |
| 710 - 711 | 710 - 711 | 710 - 711 | 710 - 711 |     |     |          | <b>HF</b>                            |
| 712       |           | 713       |           |     |     |          | <b>HF/HD/Spezial</b>                 |

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|                                                                                     |                                                                                                         |           |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------|
|  | Schnellwechsel-Einsätze Typenreihe EM<br>Quick-change adapters type EM                                  | 717 - 738 |
|  | Zubehör für Aufnahmen und Gewindeschneidapparate<br>Accessories for tap holders and tapping attachments | 739 - 762 |



|                        |
|------------------------|
| Product Finder         |
| Soft-synchro           |
| Speed-synchro          |
| KSN                    |
| MQL MMS                |
| SFM                    |
| SWITCH-MASTER          |
| HF                     |
| EM                     |
| Zubehör<br>Accessories |





## Typenreihe Softsynchro® Softsynchro® Series

### Einsatz auf Maschinen mit Synchronspindel

Das Gewindewerkzeug wird durch die Synchronspindel steigungsgeführt, eventuell auftretende Axialkräfte durch Synchronisationsfehler werden durch einen Minimallängenausgleich auf Zug und Druck minimiert.

### Application on machines with synchronous spindle

The threading tool is pitch-controlled by the synchronous spindle; eventually arising axial forces caused by synchronisation faults are minimised by a minimum length compensation on tension and on compression.



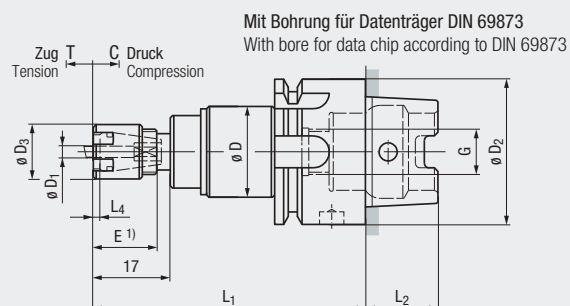
# Softsynchro®

## HSK-A

DIN 69893-1


**Einsatz auf Maschinen mit Synchronspindel**

For use on machines with synchronous spindle



| Typ<br>Type               |  | $\varnothing D_1$ |  |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $L_1$ | $L_2$ | $L_4$ | G       | T   | C   |  |
|---------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------|-------------------|-------|-------|-------|---------|-----|-----|-------------------------------------------------------------------------------------|
| <b>Softsynchro® Micro</b> | M0,5 - M4<br>(Nr.0 - Nr.8)                                                        | 2 - 4,5           | ER 8                                                                              | Hi-Q/ERM 8                                                                        | HSK-A32           | 20              | 12                | 60    | 16    | 1,5   | M10 x 1 | 0,2 | 0,2 | <b>F3150C01</b>                                                                     |

 1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

 Weitere Ausführungen auf Anfrage  
Further designs upon request

 Spannmutter ohne integrierte Abdichtung ist im Lieferumfang enthalten  
Clamping nut without integrated seal is included in the delivery

## Zubehör Accessories


 Spannzangen Typ ER  
Collets type ER

» 747


 Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743


 Spannschlüsselsatz  
Set of clamping wrenches

» 758


 Montagevorrichtung  
Assembly device

» 756


 Drehmomentschlüssel  
Torque wrenches

» 759

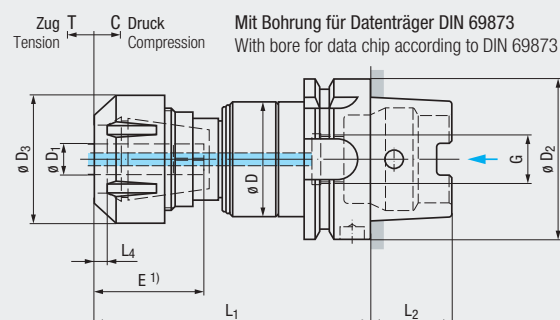




## Softsynchro®

## HSK-A

DIN 69893-1

Einsatz auf Maschinen  
mit SynchronspindelFor use on machines  
with synchronous spindle

| Typ<br>Type       |                             | Ø D <sub>1</sub> |            |                | Ø D <sub>2</sub> | Ø D | Ø D <sub>3</sub> | L <sub>1</sub><br>ER | L <sub>1</sub><br>ER-GB | L <sub>2</sub> | L <sub>4</sub> | G         | T   | C   |            |
|-------------------|-----------------------------|------------------|------------|----------------|------------------|-----|------------------|----------------------|-------------------------|----------------|----------------|-----------|-----|-----|------------|
| Softsynchro®<br>0 | M2 - M8<br>(Nr.2 - 5/16)    | 2,5 - 7          | ER 11 (GB) | Hi-Q/ERM<br>11 | HSK-A40          | 34  | 16               | 89,2                 | 87,5                    | 20             | 0,9            | M12 x 1   | 0,5 | 0,5 | F3150C02.1 |
|                   |                             |                  |            |                | HSK-A50          | 34  | 16               | 93,2                 | 91,5                    | 25             | 0,9            | M16 x 1   | 0,5 | 0,5 | F3150C03.1 |
|                   |                             |                  |            |                | HSK-A63          | 34  | 16               | 95,2                 | 93,5                    | 32             | 0,9            | M18 x 1   | 0,5 | 0,5 | F3150C04.1 |
|                   |                             |                  |            |                | HSK-A80          | 34  | 16               | 99,7                 | 98                      | 40             | 0,9            | M20 x 1,5 | 0,5 | 0,5 | F3150C05.1 |
|                   |                             |                  |            |                | HSK-A100         | 34  | 16               | 101,7                | 100                     | 50             | 0,9            | M24 x 1,5 | 0,5 | 0,5 | F3150C06.1 |
| Softsynchro®<br>1 | M4 - M12<br>(Nr.8 - 7/16)   | 4,5 - 10         | ER 20 (GB) | Hi-Q/ERC<br>20 | HSK-A40          | 34  | 34               | —                    | 89,5                    | 20             | 5              | M12 x 1   | 0,5 | 0,5 | F3151C02.1 |
|                   |                             |                  |            |                | HSK-A50          | 34  | 34               | —                    | 93,5                    | 25             | 5              | M16 x 1   | 0,5 | 0,5 | F3151C03.1 |
|                   |                             |                  |            |                | HSK-A63          | 34  | 34               | —                    | 95,5                    | 32             | 5              | M18 x 1   | 0,5 | 0,5 | F3151C04.1 |
|                   |                             |                  |            |                | HSK-A63          | 34  | 34               | —                    | 125                     | 32             | 5              | M18 x 1   | 0,5 | 0,5 | F3151037.1 |
|                   |                             |                  |            |                | HSK-A63          | 34  | 34               | —                    | 150                     | 32             | 5              | M18 x 1   | 0,5 | 0,5 | F3151918.1 |
|                   |                             |                  |            |                | HSK-A63          | 34  | 34               | —                    | 175                     | 32             | 5              | M18 x 1   | 0,5 | 0,5 | F3151038.1 |
|                   |                             |                  |            |                | HSK-A80          | 34  | 34               | —                    | 100                     | 40             | 5              | M20 x 1,5 | 0,5 | 0,5 | F3151C05.1 |
|                   |                             |                  |            |                | HSK-A100         | 34  | 34               | —                    | 102                     | 50             | 5              | M24 x 1,5 | 0,5 | 0,5 | F3151C06.1 |
| Softsynchro®<br>3 | M4 - M20<br>(Nr.8 - 3/4)    | 4,5 - 16         | ER 32 (GB) | Hi-Q/ERC<br>32 | HSK-A50          | 45  | 50               | —                    | 116,3                   | 25             | 5              | M16 x 1   | 0,5 | 0,5 | F3153C03.1 |
|                   |                             |                  |            |                | HSK-A63          | 45  | 50               | —                    | 108,8                   | 32             | 5              | M18 x 1   | 0,5 | 0,5 | F3153C04.1 |
|                   |                             |                  |            |                | HSK-A80          | 45  | 50               | —                    | 113,3                   | 40             | 5              | M20 x 1,5 | 0,5 | 0,5 | F3153C05.1 |
|                   |                             |                  |            |                | HSK-A100         | 45  | 50               | —                    | 115,3                   | 50             | 5              | M24 x 1,5 | 0,5 | 0,5 | F3153C06.1 |
| Softsynchro®<br>4 | M12 - M30<br>(7/16 - 1 1/8) | 9 - 22           | ER 40 (GB) | Hi-Q/ERC<br>40 | HSK-A63          | 63  | 63               | —                    | 146,5                   | 32             | 5              | M18 x 1   | 0,7 | 0,7 | F3154C04.1 |
|                   |                             |                  |            |                | HSK-A80          | 63  | 63               | —                    | 136                     | 40             | 5              | M20 x 1,5 | 0,7 | 0,7 | F3154C05.1 |
|                   |                             |                  |            |                | HSK-A100         | 63  | 63               | —                    | 138                     | 50             | 5              | M24 x 1,5 | 0,7 | 0,7 | F3154C06.1 |

<sup>1)</sup> Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Softsynchro® 0

Spannmutter ohne integrierte Abdichtung ist im Lieferumfang enthalten  
Clamping nut without integrated seal is included in the delivery

## Softsynchro® 1-4

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

## Zubehör

## Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und  
Kühlscheiben Typ KS/ER  
Sealing disks type DS/ER and  
coolant flush disks type KS/ER

» 750



Spannmutter mit integrierter  
Abdichtung Typ Hi-Q/ERM 11  
Clamping nut with integrated seal,  
type Hi-Q/ERM 11

» 752



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



Spannschlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



Drehmomentschlüssel  
Torque wrenches

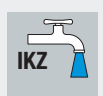
» 759



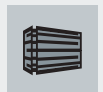
# Softsynchro®

## HSK-A

DIN 69893-1



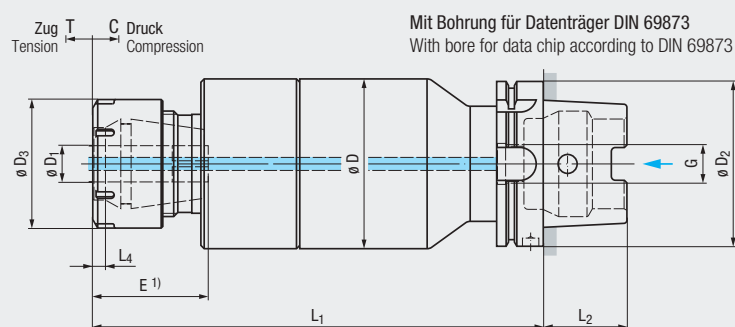
$p_{max}$   
50 bar  
(700 psi)



T C  
Soft

**Einsatz auf Maschinen mit Synchronspindel**

For use on machines with synchronous spindle



| Typ<br>Type           |  | $\varnothing D_1$ |  |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $L_1$<br>ER | $L_1$<br>ER-GB | $L_2$ | $L_4$ | G         | T | C |  |
|-----------------------|-------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------|-----------------|-------------------|-------------|----------------|-------|-------|-----------|---|---|---------------------------------------------------------------------------------------|
| <b>Softsynchro® 5</b> | M30 - M48<br>(1 1/8 - 1 3/4)                                                        | 22 - 36           | ER 50 (GB)                                                                          | Hi-Q/ERBC 50                                                                        | HSK-A100          | 103             | 78                | 269         | 265,6          | 50    | 8     | M24 x 1,5 | 2 | 2 | <b>F3155C06.1</b>                                                                     |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

Vierkantaufnahme für Werkzeuge mit Schaftdurchmesser 36 mm im Futterkörper integriert  
Square seat for tools with shank diameter 36 mm is integrated in the tap holder body

### Zubehör Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER  
Sealing disks type DS/ER

» 750



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



Spannschlüssel  
Clamping wrenches

» 758



Drehmomentschlüssel  
Torque wrenches

» 759

## Softsynchro®

## HSK-A

DIN 69893-1



$p_{\max}$   
50 bar  
(700 psi)

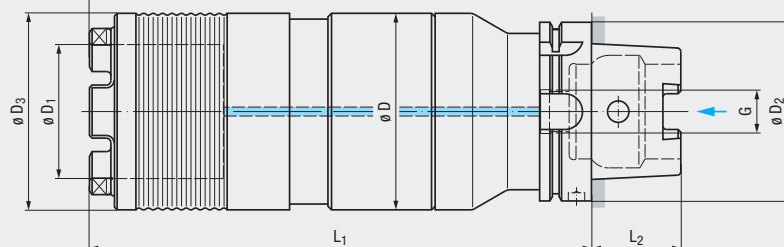


T C  
Soft

Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle

Zug T Tension  
C Druck Compression



Mit Bohrung für Datenträger DIN 69873  
With bore for data chip according to DIN 69873

| Typ<br>Type               |  |  | Ø D <sub>2</sub> | Ø D | Ø D <sub>1</sub> | Ø D <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | G         | T | C |  |
|---------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------|-----|------------------|------------------|----------------|----------------|-----------|---|---|---------------------------------------------------------------------------------------|
| <b>Softsynchro®<br/>6</b> | M45 - M76<br>(1 3/8 - 2 3/8)                                                        | HE2/IKZZ                                                                            | HSK-A100         | 110 | 75               | 110              | 281            | 50             | M24 x 1,5 | 2 | 2 | <b>F3156C06.1</b>                                                                     |

Weitere Ausführungen auf Anfrage  
Further designs upon request

Zubehör  
Accessories

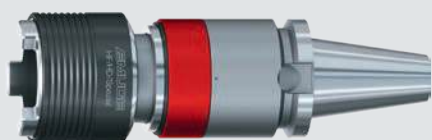
Schnellwechsel-Einsätze Typ HE2/IKZZ  
Quick-change adapters, type HE2/IKZZ

» 714



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



Weitere Schnellwechsel-Aufnahmen  
(Typenreihe HF) zur Herstellung von  
großen Gewinden siehe Seite 709 - 715

Further quick-change tap holders  
(HF series) for the production of  
large threads, see pages 709 - 715



Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

# Softsynchro®

## HSK-C

DIN 69893-1



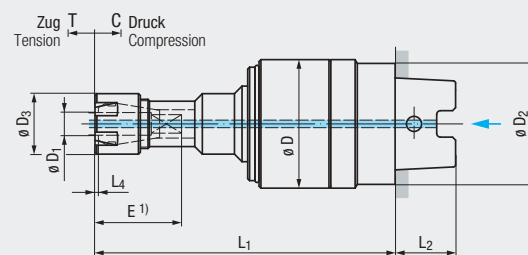
$p_{max}$   
50 bar  
(700 psi)



T C  
Soft

Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle



| Typ<br>Type           |  | ø D <sub>1</sub> |  |  | ø D <sub>2</sub> | ø D | ø D <sub>3</sub> | L <sub>1</sub><br>ER | L <sub>1</sub><br>ER-GB | L <sub>2</sub> | L <sub>4</sub> | T   | C   |  |
|-----------------------|-----------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------------|-------------------------|----------------|----------------|-----|-----|-------------------------------------------------------------------------------------|
| <b>Softsynchro® 0</b> | M2 - M8<br>(Nr.2 - 5/16)                                                          | 2,5 - 7          | ER 11 (GB)                                                                        | Hi-Q/ERM 11                                                                       | HSK-C32          | 34  | 16               | 81,2                 | 79,5                    | 16             | 0,9            | 0,5 | 0,5 | <b>F3150K01.1</b>                                                                   |
|                       |                                                                                   |                  |                                                                                   |                                                                                   | HSK-C40          | 34  | 16               | 81,2                 | 79,5                    | 20             | 0,9            | 0,5 | 0,5 | F3150K02.1                                                                          |
| <b>Softsynchro® 1</b> | M4 - M12<br>(Nr.8 - 7/16)                                                         | 4,5 - 10         | ER 20 (GB)                                                                        | Hi-Q/ERC 20                                                                       | HSK-C32          | 34  | 34               | —                    | 81,5                    | 16             | 5              | 0,5 | 0,5 | <b>F3151K01.1</b>                                                                   |
|                       |                                                                                   |                  |                                                                                   |                                                                                   | HSK-C40          | 34  | 34               | —                    | 81,5                    | 20             | 5              | 0,5 | 0,5 | F3151K02.1                                                                          |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

### Softsynchro® 0

Spannmutter ohne integrierte Abdichtung ist im Lieferumfang enthalten  
Clamping nut without integrated seal is included in the delivery

### Softsynchro® 1

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

## Zubehör Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und Kühlschleiben Typ KS/ER  
Sealing disks type DS/ER and coolant flush disks type KS/ER

» 750



Spannmutter mit integrierter Abdichtung Typ Hi-Q/ERM 11  
Clamping nut with integrated seal, type Hi-Q/ERM 11

» 752



Spannschlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



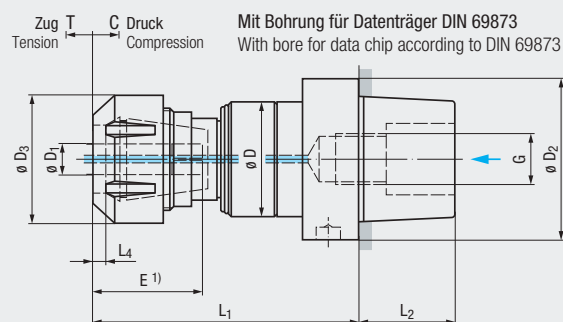
Drehmomentschlüssel  
Torque wrenches

» 759

## Softsynchro®

PSC

ISO 26623-1

Einsatz auf Maschinen  
mit SynchronspindelFor use on machines  
with synchronous spindle

| Typ<br>Type           |                             | $\varnothing D_1$ |            |             | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $L_1$<br>ER | $L_1$<br>ER-GB | $L_2$ | $L_4$ | G         | T   | C   |                   |
|-----------------------|-----------------------------|-------------------|------------|-------------|-------------------|-----------------|-------------------|-------------|----------------|-------|-------|-----------|-----|-----|-------------------|
| <b>Softsynchro® 0</b> | M2 - M8<br>(Nr.2 - 5/16)    | 2,5 - 7           | ER 11 (GB) | Hi-Q/ERM 11 | PSC 63            | 34              | 16                | 95          | 93,2           | 38    | 0,9   | M20 x 2   | 0,5 | 0,5 | <b>F3150T06.1</b> |
| <b>Softsynchro® 1</b> | M4 - M12<br>(Nr.8 - 7/16)   | 4,5 - 10          | ER 20 (GB) | Hi-Q/ERC 20 | PSC 40            | 34              | 34                | —           | 89,5           | 24    | 5     | M14 x 1,5 | 0,5 | 0,5 | <b>F3151T04.1</b> |
|                       |                             |                   |            |             | PSC 50            | 34              | 34                | —           | 89,5           | 30    | 5     | M16 x 1,5 | 0,5 | 0,5 | <b>F3151T05.1</b> |
|                       |                             |                   |            |             | PSC 63            | 34              | 34                | —           | 93,5           | 38    | 5     | M20 x 2   | 0,5 | 0,5 | <b>F3151T06.1</b> |
| <b>Softsynchro® 3</b> | M4 - M20<br>(Nr.8 - 3/4)    | 4,5 - 16          | ER 32 (GB) | Hi-Q/ERC 32 | PSC 40            | 45              | 50                | —           | 104            | 24    | 5     | M14 x 1,5 | 0,5 | 0,5 | <b>F3153T04.1</b> |
|                       |                             |                   |            |             | PSC 50            | 45              | 50                | —           | 103            | 30    | 5     | M16 x 1,5 | 0,5 | 0,5 | <b>F3153T05.1</b> |
|                       |                             |                   |            |             | PSC 63            | 45              | 50                | —           | 107            | 38    | 5     | M20 x 2   | 0,5 | 0,5 | <b>F3153T06.1</b> |
| <b>Softsynchro® 4</b> | M12 - M30<br>(7/16 - 1 1/8) | 9 - 22            | ER 40 (GB) | Hi-Q/ERC 40 | PSC 50            | 63              | 63                | —           | 128            | 30    | 5     | M14 x 1,5 | 0,7 | 0,7 | <b>F3154T05.1</b> |
|                       |                             |                   |            |             | PSC 63            | 63              | 63                | —           | 129,5          | 38    | 5     | M20 x 2   | 0,7 | 0,7 | <b>F3154T06.1</b> |
|                       |                             |                   |            |             | PSC 80            | 63              | 63                | —           | 134            | 48    | 5     | M20 x 2   | 0,7 | 0,7 | <b>F3154T08.1</b> |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754Weitere Ausführungen auf Anfrage  
Further designs upon request

## Softsynchro® 0

Spannmutter ohne integrierte Abdichtung ist im Lieferumfang enthalten  
Clamping nut without integrated seal is included in the delivery

## Softsynchro® 1-4

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

## Zubehör

## Accessories

Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747

Dichtscheiben Typ DS/ER und  
Kühlscheiben Typ KS/ER  
Sealing disks type DS/ER and  
coolant flush disks type KS/ER

» 750

Spannmutter mit integrierter  
Abdichtung Typ Hi-Q/ERM 11  
Clamping nut with integrated seal,  
type Hi-Q/ERM 11

» 752

Spannschlüsselsatz  
Set of clamping wrenches

» 758

Montagevorrichtung  
Assembly device

» 756

Drehmomentschlüssel  
Torque wrenches

» 759



Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

HF

EM

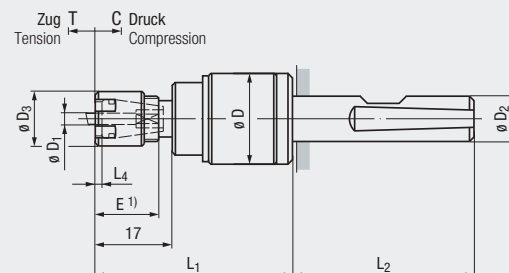
Zubehör  
Accessories

# Softsynchro®

**Zylinderschaft**  
Cylindrical shank

DIN 1835-1

Form B+E



**Einsatz auf Maschinen  
mit Synchronspindel**

For use on machines  
with synchronous spindle

| Typ<br>Type                   |  | $\varnothing D_1$ |  |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $L_1$ | $L_2$ | $L_4$ | T   | C   |  |
|-------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------|-------------------|-------|-------|-------|-----|-----|-------------------------------------------------------------------------------------|
| <b>Softsynchro®<br/>Micro</b> | M0,5 - M4<br>(Nr.0 - Nr.8)                                                        | 2 - 4,5           | ER 8                                                                              | Hi-Q/ERM<br>8                                                                     | 10                | 20              | 12                | 43,5  | 40    | 1,5   | 0,2 | 0,2 | <b>F3150G22</b>                                                                     |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannmutter ohne integrierte Abdichtung ist im Lieferumfang enthalten  
Clamping nut without integrated seal is included in the delivery

## Zubehör Accessories



Spannzangen Typ ER  
Collets type ER

» 747



Spannschlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



Drehmomentschlüssel  
Torque wrenches

» 759



## Softsynchro®

Zylinderschaft  
Cylindrical shank

DIN 1835-1

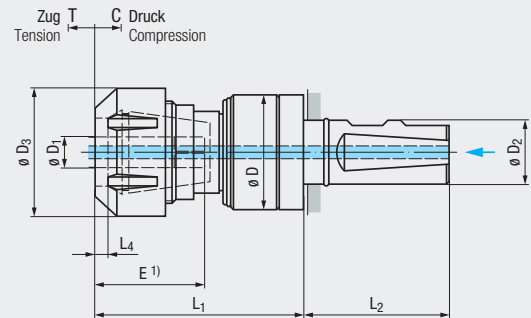
Form B+E



$p_{\max}$   
50 bar  
(700 psi)



T C  
Soft

Einsatz auf Maschinen  
mit SynchronspindelFor use on machines  
with synchronous spindle

| Typ<br>Type           |  | $\varnothing D_1$ |  |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $L_1$<br>ER | $L_1$<br>ER-GB | $L_2$ | $L_4$ | T   | C   |  |
|-----------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------|-------------------|-------------|----------------|-------|-------|-----|-----|-------------------------------------------------------------------------------------|
| <b>Softsynchro® 0</b> | M2 - M8<br>(Nr.2 - 5/16)                                                          | 2,5 - 7           | ER 11 (GB)                                                                        | Hi-Q/ERM 11                                                                       | 16                | 34              | 16                | 72,7        | 71             | 49    | 0,9   | 0,5 | 0,5 | <b>F3150G24.1.44</b>                                                                |
|                       |                                                                                   |                   |                                                                                   |                                                                                   | 20                | 34              | 16                | 72,7        | 71             | 51    | 0,9   | 0,5 | 0,5 | <b>F3150G25.1.44</b>                                                                |
| <b>Softsynchro® 1</b> | M4 - M12<br>(Nr.8 - 7/16)                                                         | 4,5 - 10          | ER 20 (GB)                                                                        | Hi-Q/ERC 20                                                                       | 20                | 34              | 34                | —           | 73             | 51    | 5     | 0,5 | 0,5 | <b>F3151G25.1.44</b>                                                                |
|                       |                                                                                   |                   |                                                                                   |                                                                                   | 25                | 34              | 34                | —           | 73             | 57    | 5     | 0,5 | 0,5 | <b>F3151G26.1.44</b>                                                                |
| <b>Softsynchro® 3</b> | M4 - M20<br>(Nr.8 - 3/4)                                                          | 4,5 - 16          | ER 32 (GB)                                                                        | Hi-Q/ERC 32                                                                       | 25                | 45              | 50                | —           | 87,3           | 57    | 5     | 0,5 | 0,5 | <b>F3153G26.1.44</b>                                                                |
|                       |                                                                                   |                   |                                                                                   |                                                                                   | 32                | 63              | 63                | —           | 113,5          | 61    | 5     | 0,7 | 0,7 | <b>F3154G27.1</b>                                                                   |
| <b>Softsynchro® 4</b> | M12 - M30<br>(7/16 - 1 1/8)                                                       | 9 - 22            | ER 40 (GB)                                                                        | Hi-Q/ERC 40                                                                       | 32                | 63              | 63                | —           | 113,5          | 61    | 5     | 0,7 | 0,7 | <b>F3154G27.1</b>                                                                   |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

**Softsynchro® 0**

Spannmutter ohne integrierte Abdichtung ist im Lieferumfang enthalten  
Clamping nut without integrated seal is included in the delivery

**Softsynchro® 1-4**

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

**Zubehör**

Accessories



Adaptionsschäfte  
Adapter shanks

» 740



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und  
Kühlscheiben Typ KS/ER  
Sealing disks type DS/ER and  
coolant flush disks type KS/ER

» 750



Spannmutter mit integrierter  
Abdichtung Typ Hi-Q/ERM 11  
Clamping nut with integrated seal,  
type Hi-Q/ERM 11

» 752



Spannschlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



Drehmomentschlüssel  
Torque wrenches

» 759





# Softsynchro®

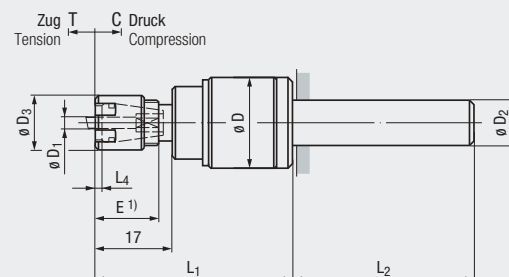
**Zylinderschaft**  
Cylindrical shank

**DIN 1835-1**

**Form A**



Soft



**Einsatz auf Maschinen mit Synchronspindel**

For use on machines with synchronous spindle

| Typ<br>Type               |  | ø D <sub>1</sub> |  |  | ø D <sub>2</sub><br>h6 | ø D      | ø D <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>4</sub> | T          | C          |                                    |
|---------------------------|-----------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------|----------|------------------|----------------|----------------|----------------|------------|------------|------------------------------------|
| <b>Softsynchro® Micro</b> | M0,5 - M4<br>(Nr.0 - Nr.8)                                                        | 2 - 4,5          | ER 8                                                                              | Hi-Q/ERM<br>8                                                                     | 10<br>10               | 20<br>20 | 12<br>12         | 43,5<br>43,5   | 40<br>66       | 1,5<br>1,5     | 0,2<br>0,2 | 0,2<br>0,2 | <b>F3150900</b><br><b>F3150901</b> |



<sup>1)</sup> Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannmutter ohne integrierte Abdichtung ist im Lieferumfang enthalten  
Clamping nut without integrated seal is included in the delivery

## Zubehör Accessories



Spannzangen Typ ER  
Collets type ER

» 747



Spannschlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



Drehmomentschlüssel  
Torque wrenches

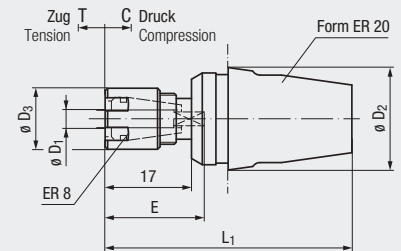
» 759



## Softsynchro®

## Form ER

DIN ISO 15488

Einsatz auf Maschinen  
mit SynchronspindelFor use on machines  
with synchronous spindle

| Typ<br>Type                   |  | $\varnothing D_1$ |  |  | Schaft/Adaption<br>Shank/Adaptation | $\varnothing D_2$ | $\varnothing D_3$ | $L_1$ | T   | C   |  |
|-------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------|-------------------|-------------------|-------|-----|-----|-------------------------------------------------------------------------------------|
| <b>Softsynchro®<br/>Micro</b> | M0,5 - M4<br>(Nr.0 - Nr.8)                                                        | 2 - 4,5           | ER 8                                                                              | Hi-Q/ERM<br>8                                                                     | ER 20                               | 20                | 12                | 48,5  | 0,2 | 0,2 | <b>F0090113</b>                                                                     |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannmutter ohne integrierte Abdichtung ist im Lieferumfang enthalten  
Clamping nut without integrated seal is included in the delivery

Zubehör  
Accessories

Spannzangen Typ ER  
Collets type ER

» 747



Spannschlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



Drehmomentschlüssel  
Torque wrenches

» 759

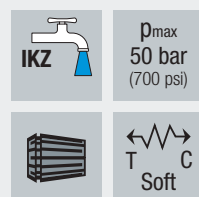


# Softsynchro®

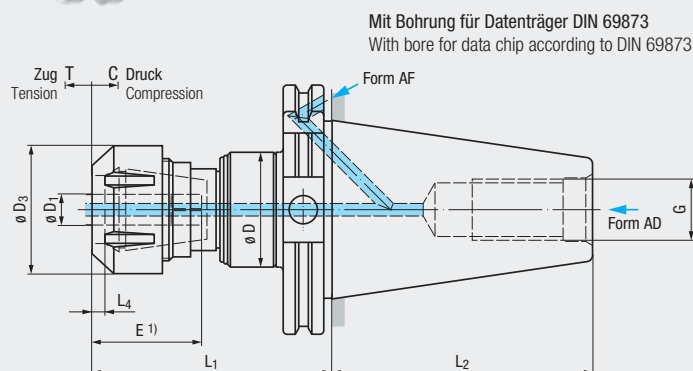
**SK**

DIN ISO 7388-1

Form AD/AF



**Einsatz auf Maschinen mit Synchronspindel** For use on machines with synchronous spindle



| Typ<br>Type           |                             | $\varnothing D_1$ |            |             | SK       | $\varnothing D$ | $\varnothing D_3$ | $L_1$ | $L_2$  | $L_4$ | G   | T   | C   |                   |
|-----------------------|-----------------------------|-------------------|------------|-------------|----------|-----------------|-------------------|-------|--------|-------|-----|-----|-----|-------------------|
| <b>Softsynchro® 1</b> | M4 - M12<br>(Nr.8 - 7/16)   | 4,5 - 10          | ER 20 (GB) | Hi-Q/ERC 20 | SK 40 AD | 34              | 34                | 85    | 68,4   | 5     | M16 | 0,5 | 0,5 | <b>F3151I51.1</b> |
|                       |                             |                   |            |             | SK 40 AF | 34              | 34                | 85    | 68,4   | 5     | M16 | 0,5 | 0,5 | F3151I51.2        |
|                       |                             |                   |            |             | SK 50 AD | 34              | 34                | 85    | 101,75 | 5     | M24 | 0,5 | 0,5 | <b>F3151I53.1</b> |
|                       |                             |                   |            |             | SK 50 AF | 34              | 34                | 85    | 101,75 | 5     | M24 | 0,5 | 0,5 | F3151I53.2        |
| <b>Softsynchro® 3</b> | M4 - M20<br>(Nr.8 - 3/4)    | 4,5 - 16          | ER 32 (GB) | Hi-Q/ERC 32 | SK 40 AD | 45              | 50                | 93,5  | 68,4   | 5     | M16 | 0,5 | 0,5 | <b>F3153I51.1</b> |
|                       |                             |                   |            |             | SK 40 AF | 45              | 50                | 93,5  | 68,4   | 5     | M16 | 0,5 | 0,5 | F3153I51.2        |
|                       |                             |                   |            |             | SK 50 AD | 45              | 50                | 93,5  | 101,75 | 5     | M24 | 0,5 | 0,5 | <b>F3153I53.1</b> |
|                       |                             |                   |            |             | SK 50 AF | 45              | 50                | 93,5  | 101,75 | 5     | M24 | 0,5 | 0,5 | F3153I53.2        |
| <b>Softsynchro® 4</b> | M12 - M30<br>(7/16 - 1 1/8) | 9 - 22            | ER 40 (GB) | Hi-Q/ERC 40 | SK 50 AD | 63              | 63                | 125,3 | 101,75 | 5     | M24 | 0,7 | 0,7 | <b>F3154I53.1</b> |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

## Zubehör Accessories

Spannzangen Typ ER (GB)  
Collets type ER (GB) » 746 - 747

Dichtscheiben Typ DS/ER und  
Kühlscheiben Typ KS/ER  
Sealing disks type DS/ER and  
coolant flush disks type KS/ER » 750

Spannschlüsselsatz  
Set of clamping wrenches » 758

Montagevorrichtung  
Assembly device » 756

Drehmomentschlüssel  
Torque wrenches » 759

## Softsynchro®

SK

DIN ISO 7388-1

Form AD/AF



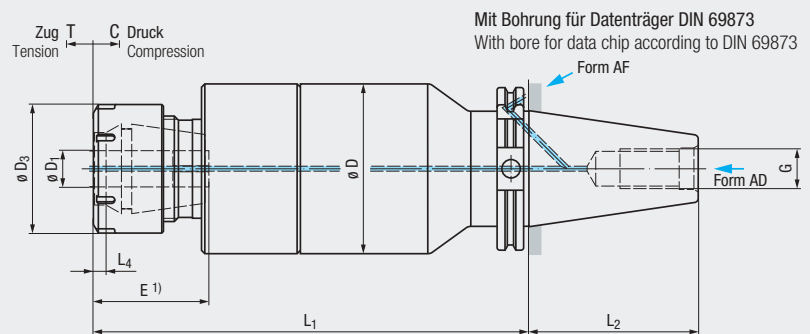
$p_{max}$   
50 bar  
(700 psi)



T C  
Soft

Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle



| Typ<br>Type               |  | $\varnothing D_1$ |  |  | SK                   | $\varnothing D$ | $\varnothing D_3$ | $L_1$<br>ER    | $L_1$<br>ER-GB | $L_2$            | $L_4$  | G          | T      | C      |                                 |
|---------------------------|-------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------|-----------------|-------------------|----------------|----------------|------------------|--------|------------|--------|--------|---------------------------------|
| <b>Softsynchro®<br/>5</b> | M30 - M48<br>(1 1/8 - 1 3/4)                                                        | 22 - 36           | ER 50 (GB)                                                                          | Hi-Q/ERBC<br>50                                                                     | SK 50 AD<br>SK 50 AF | 103<br>103      | 78<br>78          | 267,5<br>267,5 | 264<br>264     | 101,75<br>101,75 | 8<br>8 | M24<br>M24 | 2<br>2 | 2<br>2 | <b>F3155I53.1</b><br>F3155I53.2 |



1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

Vierkantaufnahme für Werkzeuge mit Schaftdurchmesser 36 mm im Futterkörper integriert  
Square seat for tools with shank diameter 36 mm is integrated in the tap holder body

## Zubehör

Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER  
Sealing disks type DS/ER

» 750



Spannschlüssel  
Clamping wrenches

» 758



Drehmomentschlüssel  
Torque wrenches

» 759



Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

ML  
MMS

SFM

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

# Softsynchro®

## SK

### DIN ISO 7388-1

### Form AD



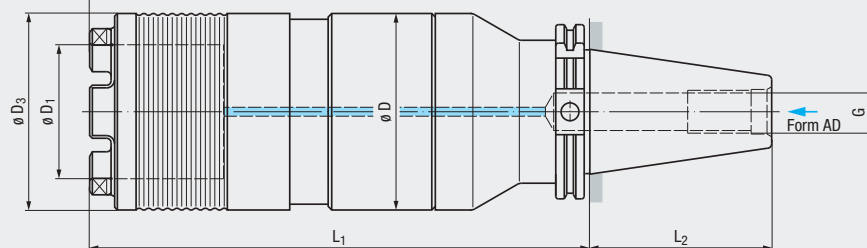
$p_{max}$   
50 bar  
(700 psi)



T C  
Soft

Zug T  
Tension  
C Druck  
Compression

Mit Bohrung für Datenträger DIN 69873  
With bore for data chip according to DIN 69873



Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle

| Typ<br>Type               |  |  | SK    | $\varnothing D$ | $\varnothing D_1$ | $\varnothing D_3$ | $L_1$ | $L_2$  | G   | T | C |  |
|---------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------|-----------------|-------------------|-------------------|-------|--------|-----|---|---|---------------------------------------------------------------------------------------|
| <b>Softsynchro®<br/>6</b> | M45 - M76<br>(1 3/8 - 2 3/8)                                                        | HE2/IKZZ                                                                            | SK 50 | 110             | 75                | 110               | 280   | 101,75 | M24 | 2 | 2 | <b>F3156153.1</b>                                                                     |

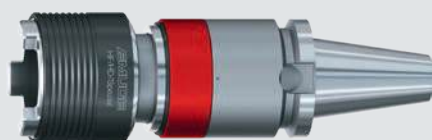
Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



Schnellwechsel-Einsätze Typ HE2/IKZZ  
Quick-change adapters, type HE2/INZZ

» 714



Weitere Schnellwechsel-Aufnahmen  
(Typenreihe HF) zur Herstellung von  
großen Gewinden siehe Seite 709 - 715

Further quick-change tap holders  
(HF series) for the production of  
large threads, see pages 709 - 715

## Softsynchro®

BT

DIN ISO 7388-2

Form JD



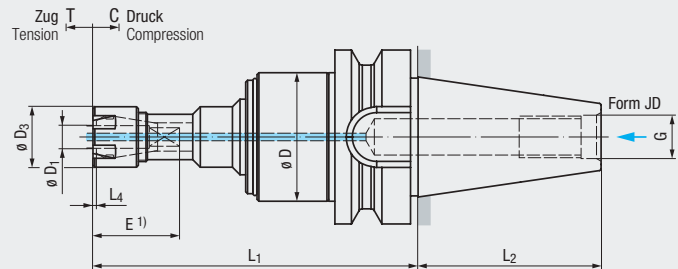
$p_{max}$   
50 bar  
(700 psi)



T C  
Soft

Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle



| Typ<br>Type           |  | $\varnothing D_1$ |  |  | BT    | $\varnothing D$ | $\varnothing D_3$ | $L_1$<br>ER | $L_1$<br>ER-GB | $L_2$ | $L_4$ | G   | T   | C   |  |
|-----------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------|-------------------|-------------|----------------|-------|-------|-----|-----|-----|-------------------------------------------------------------------------------------|
| <b>Softsynchro® 0</b> | M2 - M8<br>(Nr.2 - 5/16)                                                          | 2,5 - 7           | ER 11 (GB)                                                                        | Hi-Q/ERM<br>11                                                                    | BT 30 | 34              | 16                | 88,1        | 86,3           | 48,4  | 0,9   | M12 | 0,5 | 0,5 | <b>F3150I90.1</b>                                                                   |
| <b>Softsynchro® 1</b> | M4 - M12<br>(Nr.8 - 7/16)                                                         | 4,5 - 10          | ER 20 (GB)                                                                        | Hi-Q/ERC<br>20                                                                    | BT 30 | 34              | 34                | —           | 88             | 48,4  | 5     | M12 | 0,5 | 0,5 | <b>F3151I90.1</b>                                                                   |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

**Softsynchro® 0**

Spannmutter ohne integrierte Abdichtung ist im Lieferumfang enthalten  
Clamping nut without integrated seal is included in the delivery

**Softsynchro® 1**

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

**Zubehör**

Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und Kühlschleiben Typ KS/ER  
Sealing disks type DS/ER and coolant flush disks type KS/ER

» 750



Spannmutter mit integrierter Abdichtung Typ Hi-Q/ERM 11  
Clamping nut with integrated seal, type Hi-Q/ERM 11

» 752



Spannschlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



Drehmomentschlüssel  
Torque wrenches

» 759



# Softsynchro® Modular/IKZ

## HSK-A

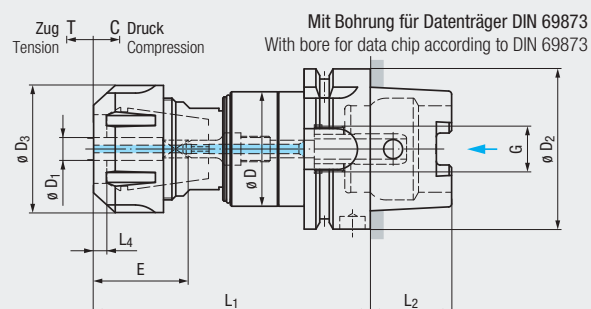
### DIN 69893-1



$p_{max}$   
50 bar  
(700 psi)



L+ 2 mm



Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle

| Typ<br>Type                   |                     | $\emptyset D_1$ |            |                | $\emptyset D_2$ | $\emptyset D$ | $\emptyset D_3$ | $L_1$ | $L_2$ | $L_4$ | G         | T   | C   |               |
|-------------------------------|---------------------|-----------------|------------|----------------|-----------------|---------------|-----------------|-------|-------|-------|-----------|-----|-----|---------------|
| Softsynchro®<br>1/Modular/IKZ | M4,5 - M10          | 6 / 7           | ER 20 (GB) | Hi-Q/ERC<br>20 | HSK-A40         | 34            | 34              | 89,5  | 20    | 5     | M12 x 1   | 0,5 | 0,5 | F3541C02.1.01 |
|                               |                     |                 |            |                | HSK-A63         | 34            | 34              | 95,5  | 32    | 5     | M18 x 1   | 0,5 | 0,5 | F3541C04.1.01 |
|                               |                     |                 |            |                | HSK-A100        | 34            | 34              | 102   | 50    | 5     | M24 x 1,5 | 0,5 | 0,5 | F3541C06.1.01 |
|                               | M8, M9,<br>M11, M12 | 8 / 9           |            |                | HSK-A40         | 34            | 34              | 89,5  | 20    | 5     | M12 x 1   | 0,5 | 0,5 | F3541C02.1.02 |
|                               |                     |                 |            |                | HSK-A63         | 34            | 34              | 95,5  | 32    | 5     | M18 x 1   | 0,5 | 0,5 | F3541C04.1.02 |
|                               |                     |                 |            |                | HSK-A100        | 34            | 34              | 102   | 50    | 5     | M24 x 1,5 | 0,5 | 0,5 | F3541C06.1.02 |
|                               | M10                 | 10              |            |                | HSK-A40         | 34            | 34              | 89,5  | 20    | 5     | M12 x 1   | 0,5 | 0,5 | F3541C02.1.03 |
|                               |                     |                 |            |                | HSK-A63         | 34            | 34              | 95,5  | 32    | 5     | M18 x 1   | 0,5 | 0,5 | F3541C04.1.03 |
|                               |                     |                 |            |                | HSK-A100        | 34            | 34              | 102   | 50    | 5     | M24 x 1,5 | 0,5 | 0,5 | F3541C06.1.03 |
| Softsynchro®<br>3/Modular/IKZ | M12                 | 9               | ER 32 (GB) | Hi-Q/ERC<br>32 | HSK-A63         | 45            | 50              | 108,8 | 32    | 5     | M18 x 1   | 0,5 | 0,5 | F3543C04.1.01 |
|                               |                     |                 |            |                | HSK-A100        | 50            | 50              | 115,3 | 50    | 5     | M24 x 1,5 | 0,5 | 0,5 | F3543C06.1.01 |
|                               | M10 - M16           | 10 - 12         |            |                | HSK-A63         | 45            | 50              | 108,8 | 32    | 5     | M18 x 1   | 0,5 | 0,5 | F3543C04.1.02 |
|                               |                     |                 |            |                | HSK-A100        | 50            | 50              | 115,3 | 50    | 5     | M24 x 1,5 | 0,5 | 0,5 | F3543C06.1.02 |
|                               | M18 - M20           | 14 - 16         |            |                | HSK-A63         | 45            | 50              | 108,8 | 32    | 5     | M18 x 1   | 0,5 | 0,5 | F3543C04.1.03 |
|                               |                     |                 |            |                | HSK-A100        | 50            | 50              | 115,3 | 50    | 5     | M24 x 1,5 | 0,5 | 0,5 | F3543C06.1.03 |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannmutter für Dichtscheiben, Kühlschmierstoffrohr und Längeneinstellschraube sind im Lieferumfang enthalten  
Clamping nut for sealing disks, coolant tube and length adjustment screw are included in the delivery

## Zubehör Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und  
Kühlscheiben Typ KS/ER  
Sealing disks type DS/ER and  
coolant flush disks type KS/ER

» 750



Längeneinstellschrauben  
Length adjustment screws

» 744



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



Spannchlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



Drehmomentschlüssel  
Torque wrenches

» 759



## Softsynchro® Modular/IKZ

BT

DIN ISO 7388-2

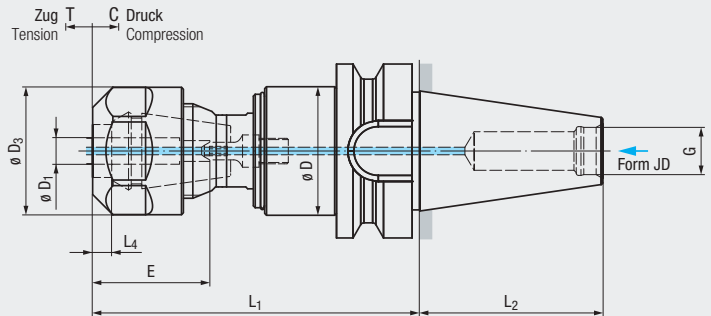
Form JD



$p_{max}$   
50 bar  
(700 psi)



$L + 2 \text{ mm}$



Einsatz auf Maschinen mit Synchronspindel

For use on machines with synchronous spindle

| Typ<br>Type                   |  | Ø D <sub>1</sub> |  |  | Ø D <sub>2</sub> | Ø D | Ø D <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>4</sub> | G   | T   | C   | new |  |
|-------------------------------|-----------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|----------------|-----|-----|-----|-----|-------------------------------------------------------------------------------------|
| Softsynchro®<br>1/Modular/IKZ | M4,5 - M10                                                                        | 6 / 7            | ER 20 (GB)                                                                        | Hi-Q/ERC 20                                                                       | BT 30            | 34  | 34               | 86,5           | 48,4           | 5              | M12 | 0,5 | 0,5 |     | F3541I90.01                                                                         |
|                               | M8, M9, M11, M12                                                                  | 8 / 9            |                                                                                   |                                                                                   | BT 30            | 34  | 34               | 86,5           | 48,4           | 5              | M12 | 0,5 | 0,5 |     | F3541I90.02                                                                         |
|                               | M10                                                                               | 10               |                                                                                   |                                                                                   | BT 30            | 34  | 34               | 86,5           | 48,4           | 5              | M12 | 0,5 | 0,5 |     | F3541I90.03                                                                         |
|                               |                                                                                   |                  |                                                                                   |                                                                                   |                  |     |                  |                |                |                |     |     |     |     |                                                                                     |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannmutter für Dichtscheiben und Längeneinstellschraube sind im Lieferumfang enthalten  
Clamping nut for sealing disks and length adjustment screw are included in the delivery

## Zubehör

## Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und Kühlschleiben Typ KS/ER  
Sealing disks type DS/ER and coolant flush disks type KS/ER

» 750



Längeneinstellschrauben  
Length adjustment screws

» 744



Spannschlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



Drehmomentschlüssel  
Torque wrenches

» 759



# Softsynchro® Slim/IKZ

## HSK-A

### DIN 69893-1



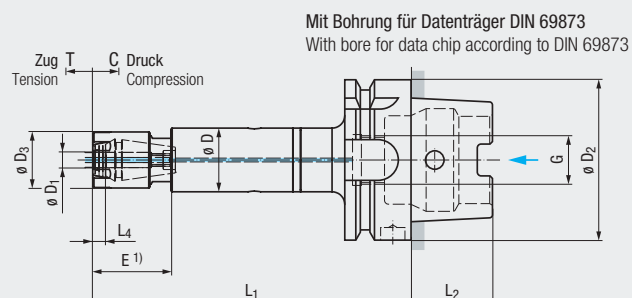
$p_{max}$   
50 bar  
(700 psi)



T C  
Soft

**Einsatz auf Maschinen mit Synchronspindel**

For use on machines with synchronous spindle



| Typ<br>Type                    |  | Ø D <sub>1</sub> |  |  | Ø D <sub>2</sub> | Ø D | Ø D <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>4</sub> | G         | T   | C   |                    |
|--------------------------------|-----------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|----------------|-----------|-----|-----|--------------------|
| <b>Softsynchro® 0/Slim/IKZ</b> | M2 - M8<br>(Nr.2 - 5/16)                                                          | 2,5 - 6          | ER 11 (GB)                                                                        | Hi-Q/ERM 11                                                                       | HSK-A63          | 25  | 16               | 122,4          | 32             | 0,9            | M18 x 1   | 0,5 | 0,5 | <b>F3660C04.XS</b> |
|                                |                                                                                   |                  |                                                                                   |                                                                                   | HSK-A63          | 25  | 16               | 147,4          | 32             | 0,9            | M18 x 1   | 0,5 | 0,5 | <b>F3660C04.S</b>  |
|                                |                                                                                   |                  |                                                                                   |                                                                                   | HSK-A63          | 25  | 16               | 172,4          | 32             | 0,9            | M18 x 1   | 0,5 | 0,5 | <b>F3660C04.M</b>  |
|                                |                                                                                   |                  |                                                                                   |                                                                                   | HSK-A63          | 25  | 16               | 197,4          | 32             | 0,9            | M18 x 1   | 0,5 | 0,5 | <b>F3660C04.L</b>  |
|                                |                                                                                   |                  |                                                                                   |                                                                                   | HSK-A100         | 25  | 16               | 122,4          | 50             | 0,9            | M24 x 1,5 | 0,5 | 0,5 | <b>F3660C06.XS</b> |
|                                |                                                                                   |                  |                                                                                   |                                                                                   | HSK-A100         | 25  | 16               | 147,4          | 50             | 0,9            | M24 x 1,5 | 0,5 | 0,5 | <b>F3660C06.S</b>  |
|                                |                                                                                   |                  |                                                                                   |                                                                                   | HSK-A100         | 25  | 16               | 172,4          | 50             | 0,9            | M24 x 1,5 | 0,5 | 0,5 | <b>F3660C06.M</b>  |
|                                |                                                                                   |                  |                                                                                   |                                                                                   | HSK-A100         | 25  | 16               | 197,4          | 50             | 0,9            | M24 x 1,5 | 0,5 | 0,5 | <b>F3660C06.L</b>  |
| <b>Softsynchro® 1/Slim/IKZ</b> | M4 - M12<br>(Nr.8 - 7/16)                                                         | 4,5 - 9          | ER 16 (GB)                                                                        | Hi-Q/ERM 16                                                                       | HSK-A63          | 25  | 22               | 125            | 32             | 5              | M18 x 1   | 0,5 | 0,5 | <b>F3661C04.XS</b> |
|                                |                                                                                   |                  |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 150            | 32             | 5              | M18 x 1   | 0,5 | 0,5 | <b>F3661C04.S</b>  |
|                                |                                                                                   |                  |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 175            | 32             | 5              | M18 x 1   | 0,5 | 0,5 | <b>F3661C04.M</b>  |
|                                |                                                                                   |                  |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 200            | 32             | 5              | M18 x 1   | 0,5 | 0,5 | <b>F3661C04.L</b>  |
|                                |                                                                                   |                  |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 125            | 50             | 5              | M24 x 1,5 | 0,5 | 0,5 | <b>F3661C06.XS</b> |
|                                |                                                                                   |                  |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 150            | 50             | 5              | M24 x 1,5 | 0,5 | 0,5 | <b>F3661C06.S</b>  |
|                                |                                                                                   |                  |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 175            | 50             | 5              | M24 x 1,5 | 0,5 | 0,5 | <b>F3661C06.M</b>  |
|                                |                                                                                   |                  |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 200            | 50             | 5              | M24 x 1,5 | 0,5 | 0,5 | <b>F3661C06.L</b>  |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

### Softsynchro® 0

Spannmutter ohne integrierte Abdichtung ist im Lieferumfang enthalten  
Clamping nut without integrated seal is included in the delivery

### Softsynchro® 1

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

### Zubehör

#### Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und  
Kühlscheiben Typ KS/ER  
Sealing disks type DS/ER and  
coolant flush disks type KS/ER

» 750



Spannmutter mit integrierter  
Abdichtung Typ Hi-Q/ERM 11  
Clamping nut with integrated seal,  
type Hi-Q/ERM 11

» 752



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



Spannschlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



Drehmomentschlüssel  
Torque wrenches

» 759

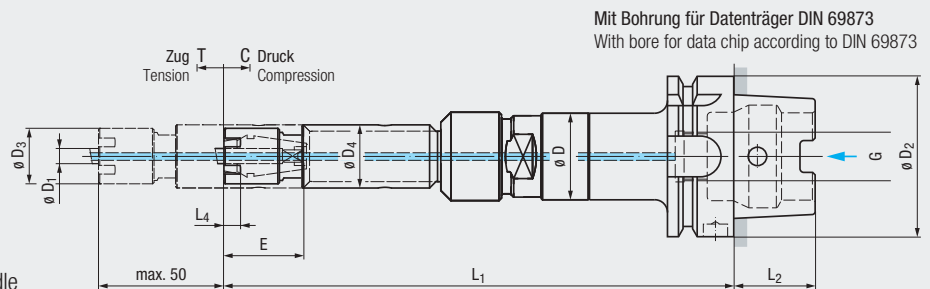
## Softsynchro® Xtension

HSK-A

DIN 69893-1



$p_{\max}$   
50 bar  
(700 psi)

Einsatz auf Maschinen  
mit SynchronspindelFor use on machines  
with synchronous spindle

| Typ<br>Type                |                           | $\varnothing D_1$ |            |                 | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $\varnothing D_4$ | $L_1$ | $L_2$ | $L_3$ | $L_4$ | G         | T   | C   |                |
|----------------------------|---------------------------|-------------------|------------|-----------------|-------------------|-----------------|-------------------|-------------------|-------|-------|-------|-------|-----------|-----|-----|----------------|
| Softsynchro®<br>1/Xtension | M4 - M12<br>(Nr.8 - 7/16) | 4,5 - 9           | ER 16 (GB) | Hi-Q/ERMC<br>16 | HSK-A63           | 35              | 22                | 25                | 210   | 32    | 124,3 | 5     | M18 x 1   | 0,5 | 0,5 | F3801C04.1     |
|                            |                           |                   |            |                 | HSK-A63           | 35              | 22                | 25                | 260   | 32    | 124,3 | 5     | M18 x 1   | 0,5 | 0,5 | F3801C04.1.260 |
|                            |                           |                   |            |                 | HSK-A100          | 35              | 22                | 25                | 216,5 | 50    | 130,8 | 5     | M24 x 1,5 | 0,5 | 0,5 | F3801C06.1     |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

## Zubehör

## Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und Kühlschcheiben Typ KS/ER  
Sealing disks type DS/ER and coolant flush disks type KS/ER

» 750



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



Spannschlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



Drehmomentschlüssel  
Torque wrenches

» 759



Drehmomentschlüssel mit Rollenschlüsselaufsatz  
Torque roller wrench

F0900006



Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

# Softsynchro® QuickLock

## HSK-A

### DIN 69893-1



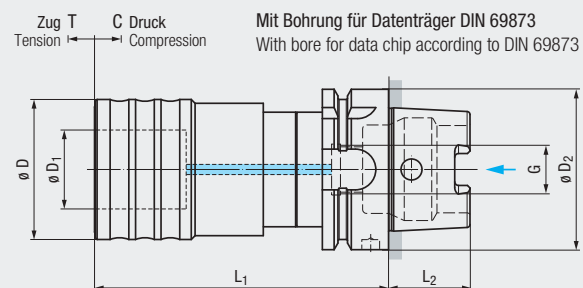
$p_{max}$   
50 bar  
(700 psi)



T C  
Soft

Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle



| Typ<br>Type                         |          |                        | $\emptyset D_2$ | $\emptyset D$ | $\emptyset D_1$ | $L_1$ | $L_2$ | G         | T   | C   |                   |
|-------------------------------------|----------|------------------------|-----------------|---------------|-----------------|-------|-------|-----------|-----|-----|-------------------|
| <b>Softsynchro®<br/>1 QuickLock</b> | M4 - M12 | EM 01(-Z)<br>QuickLock | HSK-A63         | 39            | 19              | 90    | 32    | M18 x 1   | 0,5 | 0,5 | <b>F3601C04.1</b> |
|                                     |          |                        | HSK-A100        | 39            | 19              | 96    | 50    | M24 x 1,5 | 0,5 | 0,5 | <b>F3601C06.1</b> |
| <b>Softsynchro®<br/>3 QuickLock</b> | M8 - M20 | EM 03(-Z)<br>QuickLock | HSK-A63         | 55            | 31              | 115   | 32    | M18 x 1   | 0,5 | 0,5 | <b>F3603C04.1</b> |
|                                     |          |                        | HSK-A100        | 55            | 31              | 122   | 50    | M24 x 1,5 | 0,5 | 0,5 | <b>F3603C06.1</b> |



Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



Schnellwechsel-Einsätze Typ EM/QuickLock  
Quick-change adapters type EM/QuickLock

» 724



Schnellwechsel-Einsätze Typ EM-Z/QuickLock  
Quick-change adapters type EM-Z/QuickLock

» 734



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



# Softsynchro® QuickLock

**Zylinderschaft**  
Cylindrical shank  
DIN 1835-1  
Form B+E



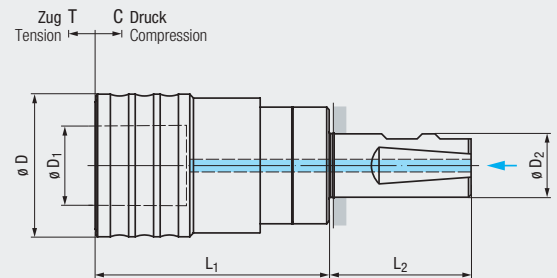
$p_{\max}$   
50 bar  
(700 psi)



T C  
Soft

**Einsatz auf Maschinen  
mit Synchronspindel**

For use on machines  
with synchronous spindle



| Typ<br>Type                         |  |  | Ø D <sub>2</sub> | Ø D      | Ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | T          | C          |  |
|-------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|----------|------------------|----------------|----------------|------------|------------|-------------------------------------------------------------------------------------|
| <b>Softsynchro®<br/>1 QuickLock</b> | M4 - M12                                                                          | EM 01(-Z)<br>QuickLock                                                            | 20<br>25         | 39<br>39 | 19<br>19         | 67<br>67       | 51<br>57       | 0,5<br>0,5 | 0,5<br>0,5 | <b>F3601G25.1.44</b><br><b>F3601G26.1.44</b>                                        |
| <b>Softsynchro®<br/>3 QuickLock</b> | M8 - M20                                                                          | EM 03(-Z)<br>QuickLock                                                            | 25               | 55       | 31               | 94             | 57             | 0,5        | 0,5        | <b>F3603G26.1.44</b>                                                                |

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



Adaptionsschäfte  
Adapter shanks

» 740



Schnellwechsel-Einsätze Typ EM/QuickLock  
Quick-change adapters type EM/QuickLock

» 724



Schnellwechsel-Einsätze Typ EM-Z/QuickLock  
Quick-change adapters type EM-Z/QuickLock

» 734

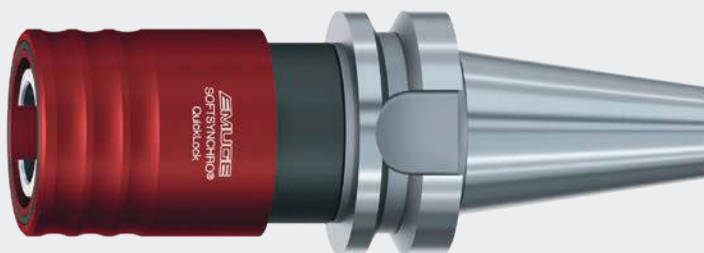


# Softsynchro® QuickLock

**BT**

DIN ISO 7388-2

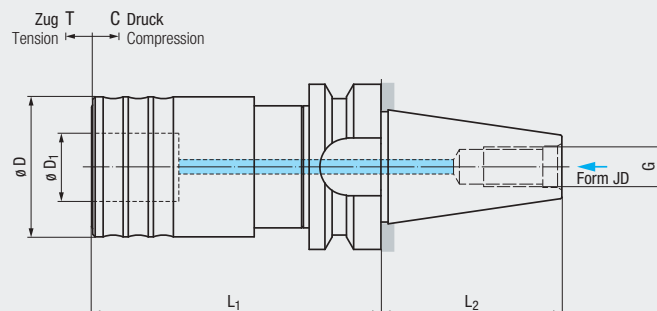
Form JD



$p_{max}$   
50 bar  
(700 psi)



T C  
Soft



Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle

| Typ<br>Type                 |          |                        |             |           |            |          |            |          |          |          |  | new        |
|-----------------------------|----------|------------------------|-------------|-----------|------------|----------|------------|----------|----------|----------|--|------------|
| Softsynchro®<br>1 QuickLock | M4 - M12 | EM 01(-Z)<br>QuickLock | BT<br>BT 30 | ø D<br>39 | ø D1<br>19 | L1<br>82 | L2<br>48,4 | G<br>M12 | T<br>0,5 | C<br>0,5 |  | F3601I90.1 |



Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



Schnellwechsel-Einsätze Typ EM/QuickLock  
Quick-change adapters type EM/QuickLock

» 724



Schnellwechsel-Einsätze Typ EM-Z/QuickLock  
Quick-change adapters type EM-Z/QuickLock

» 734



## Softsynchro® SnapLock

HSK-A

DIN 69893-1



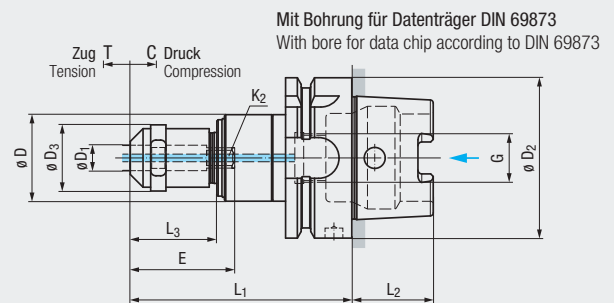
$p_{max}$   
50 bar  
(700 psi)



T C  
Soft

Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle



| Typ<br>Type                | DIN              |                  |                |  |  |     |                  |                |                |                |    |           |     |     |                |  |
|----------------------------|------------------|------------------|----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----|------------------|----------------|----------------|----------------|----|-----------|-----|-----|----------------|-------------------------------------------------------------------------------------|
|                            | ø D <sub>2</sub> | ø D <sub>1</sub> | K <sub>2</sub> |                                                                                   |                                                                                   | ø D | ø D <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>3</sub> | E  | G         | T   | C   |                |                                                                                     |
| Softsynchro®<br>1 SnapLock | HSK-A63          | 6                | 4,9            | M4,5 - M6                                                                         | M8                                                                                | 34  | 26               | 87             | 32             | 34             | 31 | M18 x 1   | 0,5 | 0,5 | F3701C04.1.D6  |                                                                                     |
|                            | HSK-A63          | 7                | 5,5            | M7                                                                                | M9 - M10                                                                          | 34  | 26               | 87             | 32             | 34             | 31 | M18 x 1   | 0,5 | 0,5 | F3701C04.1.D7  |                                                                                     |
|                            | HSK-A63          | 8                | 6,2            | M8                                                                                | M11                                                                               | 34  | 26               | 87             | 32             | 34             | 36 | M18 x 1   | 0,5 | 0,5 | F3701C04.1.D8  |                                                                                     |
|                            | HSK-A63          | 9                | 7              | M9                                                                                | M12                                                                               | 34  | 26               | 87             | 32             | 34             | 37 | M18 x 1   | 0,5 | 0,5 | F3701C04.1.D9  |                                                                                     |
|                            | HSK-A63          | 10               | 8              | M10                                                                               | —                                                                                 | 34  | 26               | 87             | 32             | 34             | 41 | M18 x 1   | 0,5 | 0,5 | F3701C04.1.D10 |                                                                                     |
|                            | HSK-A100         | 6                | 4,9            | M4,5 - M6                                                                         | M8                                                                                | 34  | 26               | 93,5           | 50             | 34             | 31 | M24 x 1,5 | 0,5 | 0,5 | F3701C06.1.D6  |                                                                                     |
|                            | HSK-A100         | 7                | 5,5            | M7                                                                                | M9 - M10                                                                          | 34  | 26               | 93,5           | 50             | 34             | 31 | M24 x 1,5 | 0,5 | 0,5 | F3701C06.1.D7  |                                                                                     |
|                            | HSK-A100         | 8                | 6,2            | M8                                                                                | M11                                                                               | 34  | 26               | 93,5           | 50             | 34             | 36 | M24 x 1,5 | 0,5 | 0,5 | F3701C06.1.D8  |                                                                                     |
|                            | HSK-A100         | 9                | 7              | M9                                                                                | M12                                                                               | 34  | 26               | 93,5           | 50             | 34             | 37 | M24 x 1,5 | 0,5 | 0,5 | F3701C06.1.D9  |                                                                                     |
|                            | HSK-A100         | 10               | 8              | M10                                                                               | —                                                                                 | 34  | 26               | 93,5           | 50             | 34             | 41 | M24 x 1,5 | 0,5 | 0,5 | F3701C06.1.D10 |                                                                                     |

Bearbeitungsmaße für Rillenform am Gewindebohrer- / Gewindeformer-Schaft siehe Seite 642  
Machining specifications for the slot shape on the shank of taps / cold-forming taps, see page 642

Weitere Ausführungen auf Anfrage  
Further designs upon request

### Zubehör

Accessories



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



SnapLock-Nut  
im Werkzeugenschaft erforderlich

SnapLock groove  
required in tool shank





Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

# Softsynchro® SnapLock

**Zylinderschaft**  
Cylindrical shank

DIN 1835-1

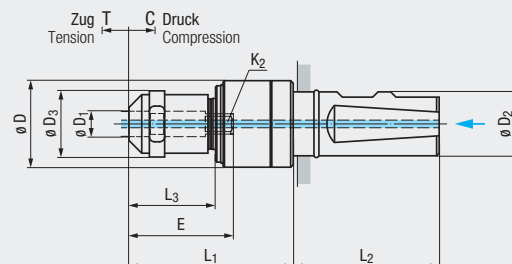
Form B+E



$p_{max}$   
50 bar  
(700 psi)



$T$   $C$   
Soft



Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle

| Typ<br>Type                | DIN               |                   |       |  |  |                 |                   |       |       |       |     |     |     |  |
|----------------------------|-------------------|-------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------|-------------------|-------|-------|-------|-----|-----|-----|-------------------------------------------------------------------------------------|
|                            | $\varnothing D_2$ | $\varnothing D_1$ | $K_2$ |                                                                                   |                                                                                   | $\varnothing D$ | $\varnothing D_3$ | $L_1$ | $L_2$ | $L_3$ | $E$ | $T$ | $C$ |                                                                                     |
| Softsynchro®<br>1 SnapLock | 25                | 6                 | 4,9   | M4,5 - M6                                                                         | M8                                                                                | 34              | 26                | 64,5  | 57    | 34    | 31  | 0,5 | 0,5 | F3701G26.1.D6                                                                       |
|                            | 25                | 7                 | 5,5   | M7                                                                                | M9 - M10                                                                          | 34              | 26                | 64,5  | 57    | 34    | 31  | 0,5 | 0,5 | F3701G26.1.D7                                                                       |
|                            | 25                | 8                 | 6,2   | M8                                                                                | M11                                                                               | 34              | 26                | 64,5  | 57    | 34    | 36  | 0,5 | 0,5 | F3701G26.1.D8                                                                       |
|                            | 25                | 9                 | 7     | M9                                                                                | M12                                                                               | 34              | 26                | 64,5  | 57    | 34    | 37  | 0,5 | 0,5 | F3701G26.1.D9                                                                       |
|                            | 25                | 10                | 8     | M10                                                                               | —                                                                                 | 34              | 26                | 64,5  | 57    | 34    | 41  | 0,5 | 0,5 | F3701G26.1.D10                                                                      |

Bearbeitungsmaße für Rillenform am Gewindebohrer- / Gewindeformer-Schaft siehe Seite 642  
Machining specifications for the slot shape on the shank of taps / cold-forming taps, see page 642

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör

Accessories



Adaptionsschäfte  
Adapter shanks

» 740



## Softsynchro® SnapLock L

HSK-A

DIN 69893-1



$p_{max}$   
50 bar  
(700 psi)

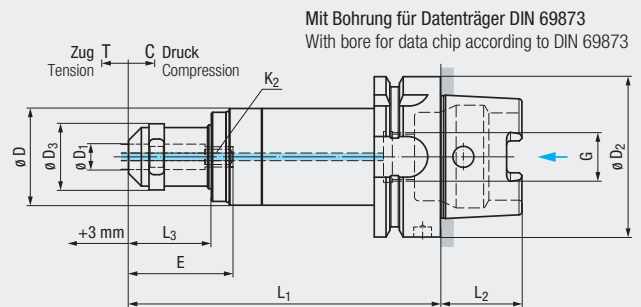


SnapLock



Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle



| Typ<br>Type                  | DIN              |                  |                |  |  |     |                  |                |                |                |    |           |     |     |                |  |
|------------------------------|------------------|------------------|----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----|------------------|----------------|----------------|----------------|----|-----------|-----|-----|----------------|-------------------------------------------------------------------------------------|
|                              | ø D <sub>2</sub> | ø D <sub>1</sub> | K <sub>2</sub> |                                                                                   |                                                                                   | ø D | ø D <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>3</sub> | E  | G         | T   | C   |                |                                                                                     |
| Softsynchro®<br>1 SnapLock L | HSK-A63          | 6                | 4,9            | M4,5 - M6                                                                         | M8                                                                                | 38  | 26               | 122,5          | 32             | 32,5           | 31 | M18 x 1   | 0,5 | 0,5 | F3711C04.1.D6  |                                                                                     |
|                              | HSK-A63          | 7                | 5,5            | M7                                                                                | M9 - M10                                                                          | 38  | 26               | 122,5          | 32             | 32,5           | 31 | M18 x 1   | 0,5 | 0,5 | F3711C04.1.D7  |                                                                                     |
|                              | HSK-A63          | 8                | 6,2            | M8                                                                                | M11                                                                               | 38  | 26               | 122,5          | 32             | 32,5           | 36 | M18 x 1   | 0,5 | 0,5 | F3711C04.1.D8  |                                                                                     |
|                              | HSK-A63          | 9                | 7              | M9                                                                                | M12                                                                               | 38  | 26               | 122,5          | 32             | 32,5           | 37 | M18 x 1   | 0,5 | 0,5 | F3711C04.1.D9  |                                                                                     |
|                              | HSK-A63          | 10               | 8              | M10                                                                               | —                                                                                 | 38  | 26               | 122,5          | 32             | 32,5           | 41 | M18 x 1   | 0,5 | 0,5 | F3711C04.1.D10 |                                                                                     |
|                              | HSK-A100         | 6                | 4,9            | M4,5 - M6                                                                         | M8                                                                                | 38  | 26               | 129            | 50             | 32,5           | 31 | M24 x 1,5 | 0,5 | 0,5 | F3711C06.1.D6  |                                                                                     |
|                              | HSK-A100         | 7                | 5,5            | M7                                                                                | M9 - M10                                                                          | 38  | 26               | 129            | 50             | 32,5           | 31 | M24 x 1,5 | 0,5 | 0,5 | F3711C06.1.D7  |                                                                                     |
|                              | HSK-A100         | 8                | 6,2            | M8                                                                                | M11                                                                               | 38  | 26               | 129            | 50             | 32,5           | 36 | M24 x 1,5 | 0,5 | 0,5 | F3711C06.1.D8  |                                                                                     |
|                              | HSK-A100         | 9                | 7              | M9                                                                                | M12                                                                               | 38  | 26               | 129            | 50             | 32,5           | 37 | M24 x 1,5 | 0,5 | 0,5 | F3711C06.1.D9  |                                                                                     |
|                              | HSK-A100         | 10               | 8              | M10                                                                               | —                                                                                 | 38  | 26               | 129            | 50             | 32,5           | 41 | M24 x 1,5 | 0,5 | 0,5 | F3711C06.1.D10 |                                                                                     |

Bearbeitungsmaße für Rillenform am Gewindebohrer- / Gewindeformer-Schaft siehe Seite 642  
Machining specifications for the slot shape on the shank of taps / cold-forming taps, see page 642

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör

Accessories



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



SnapLock-Nut  
im Werkzeugenschaft erforderlich

SnapLock groove  
required in tool shank



Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

# Softsynchro® SnapLock L

**Zylinderschaft**  
Cylindrical shank

DIN 1835-1

Form B+E

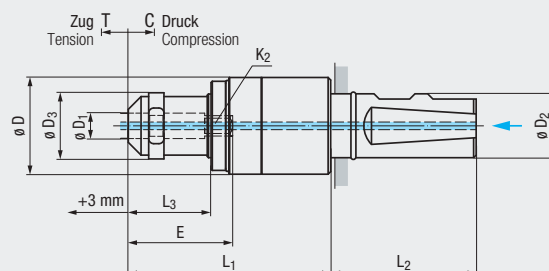


$p_{max}$   
50 bar  
(700 psi)



Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle



| Typ<br>Type                | DIN              |                  |                |           |          |     |                  |                |                |                |    |     |     |                |
|----------------------------|------------------|------------------|----------------|-----------|----------|-----|------------------|----------------|----------------|----------------|----|-----|-----|----------------|
|                            | ø D <sub>2</sub> | ø D <sub>1</sub> | K <sub>2</sub> |           |          | ø D | ø D <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>3</sub> | E  | T   | C   |                |
| Softsynchro®<br>1 SnapLock | 25               | 6                | 4,9            | M4,5 - M6 | M8       | 38  | 26               | 79,5           | 57             | 32,5           | 31 | 0,5 | 0,5 | F3711G26.1.D6  |
|                            | 25               | 7                | 5,5            | M7        | M9 - M10 | 38  | 26               | 79,5           | 57             | 32,5           | 31 | 0,5 | 0,5 | F3711G26.1.D7  |
|                            | 25               | 8                | 6,2            | M8        | M11      | 38  | 26               | 79,5           | 57             | 32,5           | 36 | 0,5 | 0,5 | F3711G26.1.D8  |
|                            | 25               | 9                | 7              | M9        | M12      | 38  | 26               | 79,5           | 57             | 32,5           | 37 | 0,5 | 0,5 | F3711G26.1.D9  |
|                            | 25               | 10               | 8              | M10       | —        | 38  | 26               | 79,5           | 57             | 32,5           | 41 | 0,5 | 0,5 | F3711G26.1.D10 |



Weitere Ausführungen auf Anfrage  
Further designs upon request

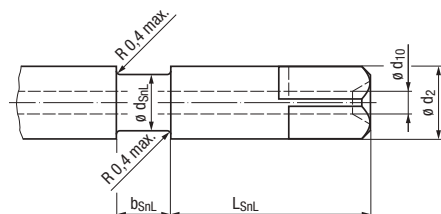
## Zubehör Accessories



Adaptionsschäfte  
Adapter shanks

» 740

## Bearbeitungsmaße für Rillenform am Gewindebohrer- / Gewindeformer-Schaft Machining specifications for the slot shape on the shank of taps / cold-forming taps



| ø d <sub>2</sub> | ø d <sub>10</sub> | L <sub>SnL</sub> | b <sub>SnL</sub>                | ø d <sub>SnL</sub> |
|------------------|-------------------|------------------|---------------------------------|--------------------|
| 6                | 2                 | 17 ± 0,1         | 6 <sup>+0,05</sup> <sub>0</sub> | 4,2 ± 0,1          |
| 7                | 2,5               | 17 ± 0,1         |                                 | 5,2 ± 0,1          |
| 8                | 2,5               | 22 ± 0,1         |                                 | 6,2 ± 0,1          |
| 9                | 3                 | 23 ± 0,1         |                                 | 7,2 ± 0,1          |
| 10               | 3                 | 27 ± 0,1         |                                 | 8,2 ± 0,1          |



**SnapLock-Nut**  
im Werkzeugschaft erforderlich

**SnapLock groove**  
required in tool shank

## Softsynchro®/PGR

powRgrip®

HSK-A

DIN 69893-1



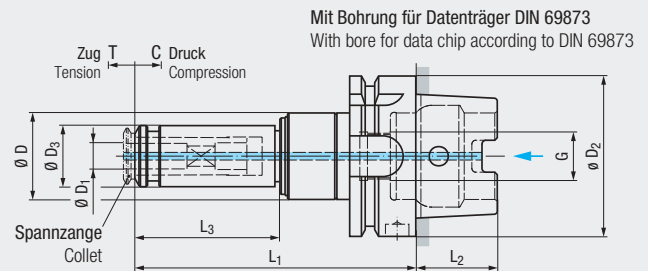
$p_{\max}$   
50 bar  
(700 psi)



T C  
Soft

Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle



| Typ<br>Type           |  | Ø D <sub>1</sub> |  | Ø D <sub>2</sub> | Ø D | Ø D <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>3</sub> | G         | T   | C   |  |
|-----------------------|-----------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|----------------|-----------|-----|-----|-------------------------------------------------------------------------------------|
| Softsynchro®<br>1/PGR | M4 - M12<br>(Nr.8 - 7/16)                                                         | 4,5 - 10         | PGR 15 GB                                                                         | HSK-A50          | 34  | 24               | 108            | 25             | 57             | M16 x 1   | 0,5 | 0,5 | F3221C03.1                                                                          |
|                       |                                                                                   |                  |                                                                                   | HSK-A63          | 34  | 24               | 110            | 32             | 57             | M18 x 1   | 0,5 | 0,5 | <b>F3221C04.1</b>                                                                   |
|                       |                                                                                   |                  |                                                                                   | HSK-A80          | 34  | 24               | 114,5          | 40             | 57             | M20 x 1,5 | 0,5 | 0,5 | F3221C05.1                                                                          |
|                       |                                                                                   |                  |                                                                                   | HSK-A100         | 34  | 24               | 116,5          | 50             | 57             | M24 x 1,5 | 0,5 | 0,5 | <b>F3221C06.1</b>                                                                   |
| Softsynchro®<br>3/PGR | M8 - M20<br>(5/16 - 3/4)                                                          | 8 - 16           | PGR 25 GB                                                                         | HSK-A50          | 45  | 40               | 132,5          | 25             | 67             | M16 x 1   | 0,5 | 0,5 | F3223C03.1                                                                          |
|                       |                                                                                   |                  |                                                                                   | HSK-A63          | 45  | 40               | 125            | 32             | 67             | M18 x 1   | 0,5 | 0,5 | <b>F3223C04.1</b>                                                                   |
|                       |                                                                                   |                  |                                                                                   | HSK-A80          | 45  | 40               | 129,5          | 40             | 67             | M20 x 1,5 | 0,5 | 0,5 | <b>F3223C05.1</b>                                                                   |
|                       |                                                                                   |                  |                                                                                   | HSK-A100         | 45  | 40               | 131,5          | 50             | 67             | M24 x 1,5 | 0,5 | 0,5 | <b>F3223C06.1</b>                                                                   |

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör

### Accessories



Spannzangen Typ PGR-GB  
Collets type PGR-GB

» 749



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



# Softsynchro®/PGR

**Zylinderschaft**  
Cylindrical shank

DIN 1835-1

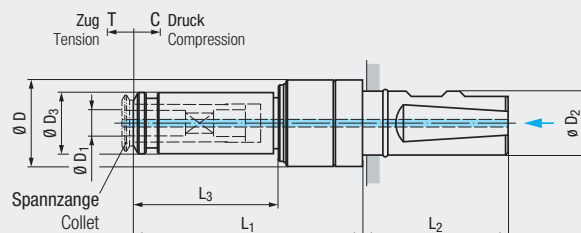
Form B+E



$p_{max}$   
50 bar  
(700 psi)



T C  
Soft



Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle

| Typ<br>Type                   |  | $\varnothing D_1$ |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $L_1$ | $L_2$ | $L_3$ | T   | C   |  |
|-------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-------------------|-----------------|-------------------|-------|-------|-------|-----|-----|-------------------------------------------------------------------------------------|
| <b>Softsynchro®<br/>1/PGR</b> | M4 - M12<br>(Nr.8 - 7/16)                                                         | 4,5 - 10          | PGR 15 GB                                                                         | 25                | 34              | 24                | 87,5  | 57    | 57    | 0,5 | 0,5 | <b>F3221G26.1.44</b>                                                                |
| <b>Softsynchro®<br/>3/PGR</b> | M8 - M20<br>(5/16 - 3/4)                                                          | 8 - 16            | PGR 25 GB                                                                         | 25                | 45              | 40                | 103,5 | 57    | 67    | 0,5 | 0,5 | <b>F3223G26.1.44</b>                                                                |

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



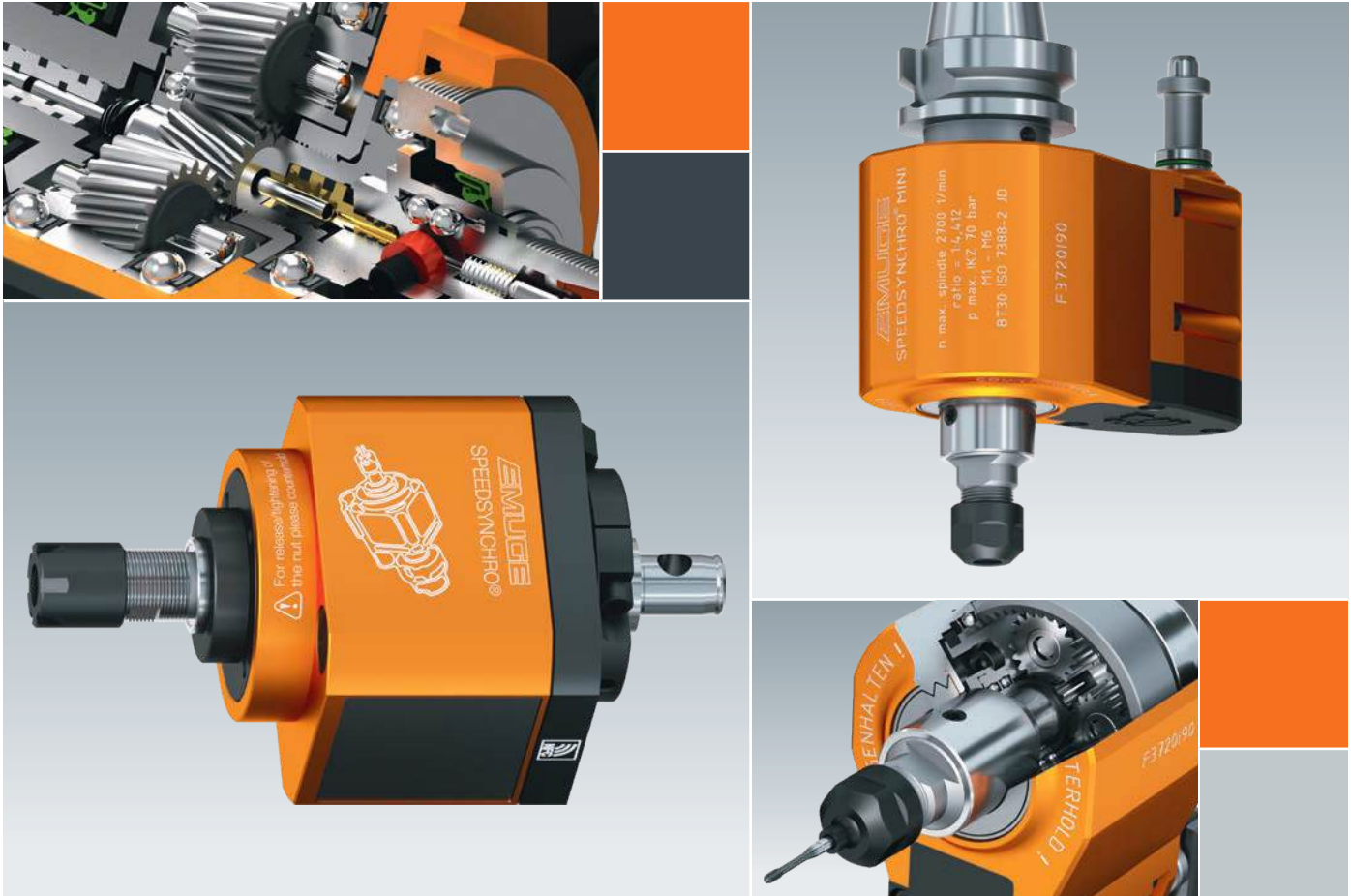
Adaptionsschäfte  
Adapter shanks

» 740



Spannzangen Typ PGR-GB  
Collets type PGR-GB

» 749



## Typenreihe Speedsynchro® Speedsynchro® Series

### Softsynchro®-Technologie mit Übersetzungsgetriebe

Die Typenreihe Speedsynchro® verfügt über ein integriertes Übersetzungsgetriebe mit einem Übersetzungsverhältnis von 1 : 4,412 und ist mit der Softsynchro®-Minimallängenausgleichsfunktion kombiniert.

Für eine hohe Werkzeugdrehzahl bei niedriger Spindeldrehzahl zur Taktzeiteinsparung, Energieeinsparung, Axialkraftreduzierung und Erhöhung der Wirtschaftlichkeit.

### Softsynchro® technology with transmission gearing

The Speedsynchro® series uses an integrated transmission gearing with a transmission ratio of 1:4.412 and combines it with the Softsynchro® minimal length compensation function.

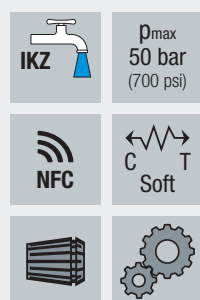
For achieving a high tool speed at a low spindle speed in order to reduce cycle time, save energy, reduce axial force and increase efficiency.



- Product Finder
- Soft-synchro
- Speed-synchro**
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- HF
- EM
- Zubehör Accessories

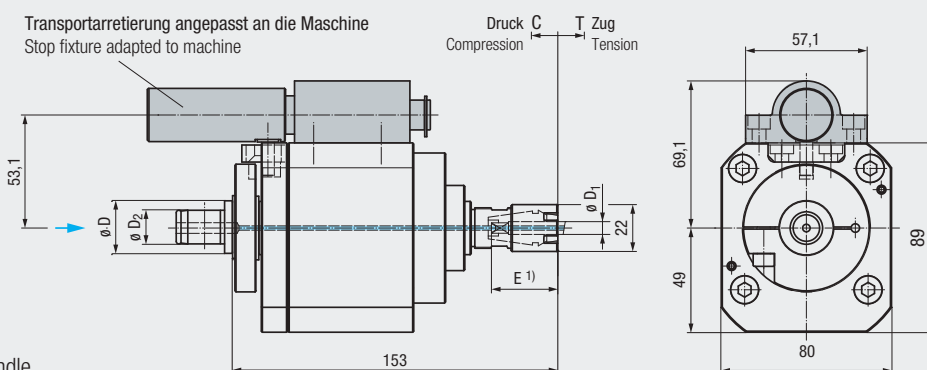
# Speedsynchro® Modular NFC/IKZ

**ABS®**  
(System KOMET)



**Einsatz auf Maschinen mit Synchronspindel**

For use on machines with synchronous spindle



| Type<br>Type                             |  |  |  | Ø D    | Ø D <sub>2</sub> | Ø D <sub>1</sub> | Max. Spindeldrehzahl<br>[min <sup>-1</sup> ]<br>Max. spindle speed<br>[rpm] | Übersetzungs-<br>verhältnis<br>Transmission<br>ratio | C   | T   |  |
|------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|------------------|------------------|-----------------------------------------------------------------------------|------------------------------------------------------|-----|-----|---------------------------------------------------------------------------------------|
| <b>Speedsynchro®<br/>Modular NFC/IKZ</b> | M1 - M8<br>(Nr.0 - 5/16)                                                            | ER 16 (GB)                                                                          | Hi-Q/ERMC<br>16                                                                     | ABS 32 | 16               | 2,5 - 8          | 2000                                                                        | 1 : 4,412                                            | 0,5 | 0,5 | <b>F3761L01</b>                                                                       |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

Die Spannzangen-Aufnahme Speedsynchro® Modular NFC/IKZ kann nur mit Adaptionsschäfte und Transportarretierung eingesetzt werden.

Die Anpassung der Transportarretierung an die maschinenseitigen Vorgaben erfolgt durch EMUGE. Bitte wenden Sie sich hierfür an den für Sie zuständigen Vertriebspartner.

The collet holder Speedsynchro® Modular NFC/IKZ can only be used with adapter shank and stop fixture.

The adaptation of the stop fixture to the specifications of the machine is carried out by EMUGE. Please contact your responsible distribution partner for more information.

## Zubehör Accessories



Adaptionsschäfte  
Adapter shanks

» 741



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und  
Kühlscheiben Typ KS/ER  
Sealing disks type DS/ER and  
coolant flush disks type KS/ER

» 750



Montagevorrichtung  
Assembly device

» 757



Längeneinstellschrauben  
Length adjustment screws

» 745



Drehmomentschlüssel  
Torque wrenches

» 759



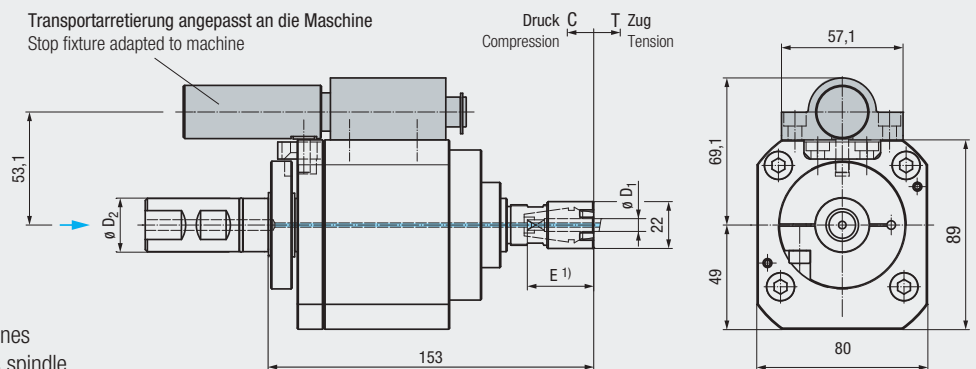
## Speedsynchro® Modular NFC/IKZ

**Zylinderschaft**  
Cylindrical shank  
DIN 1835-1  
Form B



**Einsatz auf Maschinen mit Synchronspindel**

For use on machines with synchronous spindle



| Typ<br>Type                              |  |  |  | $\varnothing D_2$ | $\varnothing D_1$ | Max. Spindeldrehzahl<br>[min <sup>-1</sup> ]<br>Max. spindle speed<br>[rpm] | Übersetzungs-<br>verhältnis<br>Transmission<br>ratio | C   | T   |  |
|------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------|-------------------|-----------------------------------------------------------------------------|------------------------------------------------------|-----|-----|---------------------------------------------------------------------------------------|
| <b>Speedsynchro®<br/>Modular NFC/IKZ</b> | M1 - M8<br>(Nr.0 - 5/16)                                                            | ER 16 (GB)                                                                          | HI-Q/ERMC<br>16                                                                     | 25                | 2,5 - 8           | 2000                                                                        | 1 : 4,412                                            | 0,5 | 0,5 | <b>F3761G26</b>                                                                       |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

Die Spannzangen-Aufnahme Speedsynchro® Modular NFC/IKZ kann nur mit Adaptionsschaft und Transportarretierung eingesetzt werden.

Die Anpassung der Transportarretierung an die maschinenseitigen Vorgaben erfolgt durch EMUGE. Bitte wenden Sie sich hierfür an den für Sie zuständigen Vertriebspartner.

The collet holder Speedsynchro® Modular NFC/IKZ can only be used with adapter shank and stop fixture.

The adaptation of the stop fixture to the specifications of the machine is carried out by EMUGE. Please contact your responsible distribution partner for more information.

## Zubehör

Accessories



Adaptionsschäfte  
Adapter shanks

» 740



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und  
Kühlscheiben Typ KS/ER  
Sealing disks type DS/ER and  
coolant flush disks type KS/ER

» 750



Montagevorrichtung  
Assembly device

» 757



Längeneinstellschrauben  
Length adjustment screws

» 745



Drehmomentschlüssel  
Torque wrenches

» 759

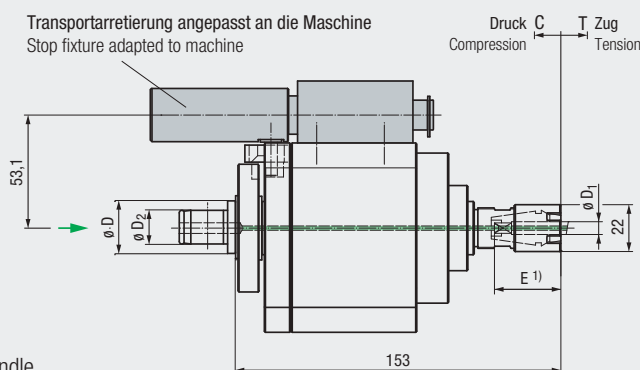


# Speedsynchro® Modular NFC/MQL

**ABS®**  
(System KOMET)



Transportarretierung angepasst an die Maschine  
Stop fixture adapted to machine



Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle

| Type<br>Type                             |  |  |  | $\varnothing D$ | $\varnothing D_2$ | $\varnothing D_1$ | Max. Spindeldrehzahl<br>[min <sup>-1</sup> ]<br>Max. spindle speed<br>[rpm] | Übersetzungs-<br>verhältnis<br>Transmission<br>ratio | C   | T   |  |
|------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|-------------------|-------------------|-----------------------------------------------------------------------------|------------------------------------------------------|-----|-----|---------------------------------------------------------------------------------------|
| <b>Speedsynchro®<br/>Modular NFC/MQL</b> | M4,5 - M8                                                                           | ER 16 (GB)                                                                          | Hi-Q/ERMC<br>16                                                                     | ABS 32          | 16                | 4 - 8             | 2000                                                                        | 1 : 4,412                                            | 0,5 | 0,5 | <b>F3771L01</b>                                                                       |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

Die Spannzangen-Aufnahme Speedsynchro® Modular NFC/MQL kann nur mit Adaptionsschäfte, MMS-Kühlschmierstoffrohr, Transportarretierung und Längeneinstellschraube eingesetzt werden.

Die Anpassung der Transportarretierung an die maschinenseitigen Vorgaben erfolgt durch EMUGE. Bitte wenden Sie sich hierfür an den für Sie zuständigen Vertriebspartner.

The collet holder Speedsynchro® Modular NFC/MQL can only be used with adapter shank, MQL coolant tube, stop fixture and length adjustment screw.

The adaptation of the stop fixture to the specifications of the machine is carried out by EMUGE. Please contact your responsible distribution partner for more information.

## Zubehör Accessories



Adaptionsschäfte  
Adapter shanks

» 741



Montagevorrichtung  
Assembly device

» 757



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Längeneinstellschrauben  
Length adjustment screws

» 745



Dichtscheiben Typ DS/ER  
Sealing disks type DS/ER

» 750



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



Drehmomentschlüssel  
Torque wrenches

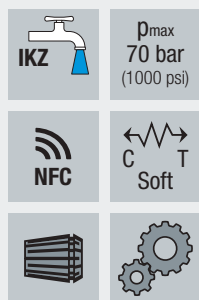
» 759

## Speedsynchro® Mini

BT

DIN ISO 7388-2

Form JD

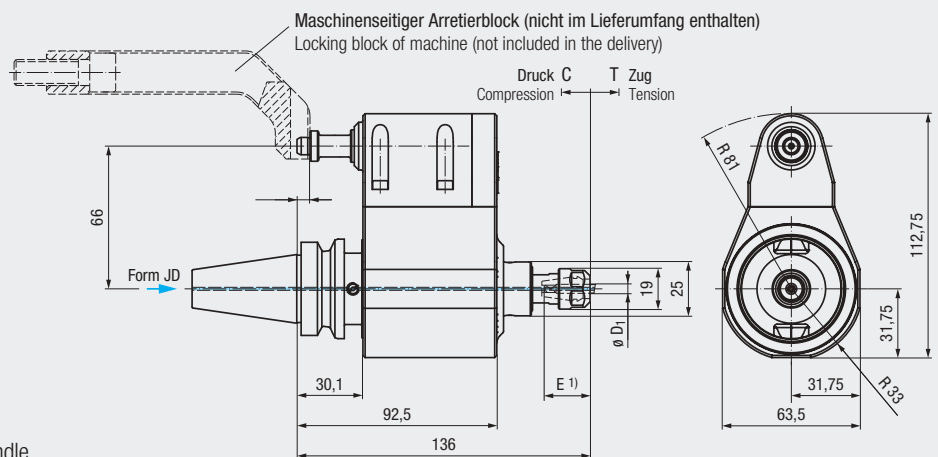


$p_{\max}$   
70 bar  
(1000 psi)

C T  
Soft

Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle



| Typ<br>Type                   |         |            |                | BT    | $\varnothing D_1$ | Max. Spindeldrehzahl<br>[min <sup>-1</sup> ]<br>Max. spindle speed<br>[rpm] | Übersetzungs-<br>verhältnis<br>Transmission<br>ratio | C   | T   |                 |
|-------------------------------|---------|------------|----------------|-------|-------------------|-----------------------------------------------------------------------------|------------------------------------------------------|-----|-----|-----------------|
| <b>Speedsynchro®<br/>Mini</b> | M1 - M6 | ER 11 (GB) | Hi-Q/ERC<br>11 | BT 30 | 2,5 - 6           | 2700                                                                        | 1 : 4,412                                            | 0,5 | 0,5 | <b>F3720I90</b> |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery



Maschinenseitiger Arretierblock für die meisten **Brother Speedio**-Maschinen mit Schaftanschluss BT 30  
Locking block of machine for most **Brother Speedio** machines with shank connection BT 30

F10716446



Maschinenseitiger Arretierblock für **FANUC Robodrill**-Maschinen mit Schaftanschluss BT 30  
Locking block of machine for **FANUC Robodrill** machines with shank connection BT 30

F10716451

## Zubehör

## Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und  
Kühlscheiben Typ KS/ER  
Sealing disks type DS/ER and  
coolant flush disks type KS/ER

» 750



Montagevorrichtung  
Assembly device

» 757



Drehmomentschlüssel  
Torque wrenches

» 759



|                        |
|------------------------|
| Product Finder         |
| Soft-synchro           |
| Speed-synchro          |
| KSN                    |
| MQL MMS                |
| SFM                    |
| SWITCH-MASTER          |
| HF                     |
| EM                     |
| Zubehör<br>Accessories |







## Typenreihe KSN KSN Series

### Einsatz auf CNC-Bearbeitungszentren und konventionellen Werkzeugmaschinen

Die Genauigkeit der programmierten Gewindetiefe wird durch einen Druckpunktmechanismus garantiert. Auftretende Differenzen zwischen dem Maschinenvorschub und der Gewindesteigung werden durch einen Längenausgleich kompensiert.

### Application on CNC machining centres and conventional machine tools

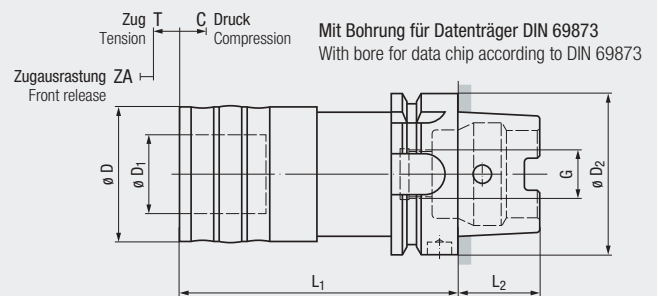
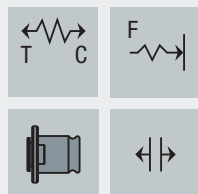
The accuracy of the programmed thread depth is guaranteed by a pressure point mechanism. Arising differences between spindle feed and thread pitch are compensated by a length compensation.



# KSN

## HSK-A

### DIN 69893-1



Einsatz auf CNC-Bearbeitungszentren, sonstigen Werkzeugmaschinen und Säulenbohrmaschinen

For use on CNC machining centres, other machine tools and pillar drilling machines

| Typ<br>Type  |                             |       | ø D <sub>2</sub> | ø D | ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | G         | T    | C    | ZA  |                    |
|--------------|-----------------------------|-------|------------------|-----|------------------|----------------|----------------|-----------|------|------|-----|--------------------|
| <b>KSN 1</b> | M3 - M14<br>(Nr.4 - 9/16)   | EM 01 | HSK-A32          | 36  | 19               | 71             | 16             | M10 x 1   | 8    | 5    | 2,1 | <b>F3301C01.30</b> |
|              |                             |       | HSK-A40          | 36  | 19               | 73             | 20             | M12 x 1   | 8    | 5    | 2,1 | <b>F3301C02.30</b> |
|              |                             |       | HSK-A50          | 36  | 19               | 77             | 25             | M16 x 1   | 8    | 5    | 2,1 | <b>F3301C03.30</b> |
|              |                             |       | HSK-A63          | 36  | 19               | 79             | 32             | M18 x 1   | 8    | 5    | 2,1 | <b>F3301C04.30</b> |
|              |                             |       | HSK-A80          | 36  | 19               | 83,5           | 40             | M20 x 1,5 | 8    | 5    | 2,1 | <b>F3301C05.30</b> |
|              |                             |       | HSK-A100         | 36  | 19               | 85,5           | 50             | M24 x 1,5 | 8    | 5    | 2,1 | <b>F3301C06.30</b> |
| <b>KSN 3</b> | M4,5 - M24<br>(Nr.10 - 1")  | EM 03 | HSK-A40          | 53  | 31               | 107            | 20             | M12 x 1   | 15   | 8,5  | 2,8 | F3303C02.30        |
|              |                             |       | HSK-A50          | 53  | 31               | 111            | 25             | M16 x 1   | 15   | 8,5  | 2,8 | <b>F3303C03.30</b> |
|              |                             |       | HSK-A63          | 53  | 31               | 113            | 32             | M18 x 1   | 15   | 8,5  | 2,8 | <b>F3303C04.30</b> |
|              |                             |       | HSK-A80          | 53  | 31               | 117,5          | 40             | M20 x 1,5 | 15   | 8,5  | 2,8 | F3303C05.30        |
|              |                             |       | HSK-A100         | 53  | 31               | 119,5          | 50             | M24 x 1,5 | 15   | 8,5  | 2,8 | <b>F3303C06.30</b> |
| <b>KSN 4</b> | M14 - M36<br>(9/16 - 1 3/8) | EM 04 | HSK-A63          | 78  | 48               | 164            | 32             | M18 x 1   | 23,5 | 15   | 4,1 | <b>F3304C04.30</b> |
|              |                             |       | HSK-A80          | 78  | 48               | 168,5          | 40             | M20 x 1,5 | 23,5 | 15   | 4,1 | F3304C05.30        |
|              |                             |       | HSK-A100         | 78  | 48               | 170,5          | 50             | M24 x 1,5 | 23,5 | 15   | 4,1 | <b>F3304C06.30</b> |
| <b>KSN 5</b> | M22 - M48<br>(7/8 - 1 3/4)  | EM 05 | HSK-A80          | 96  | 60               | 203            | 40             | M20 x 1,5 | 25   | 16,5 | 5,7 | F3305C05.30        |
|              |                             |       | HSK-A100         | 96  | 60               | 205            | 50             | M24 x 1,5 | 25   | 16,5 | 5,7 | <b>F3305C06.30</b> |



Weitere Ausführungen auf Anfrage  
Further designs upon request

### Zubehör Accessories



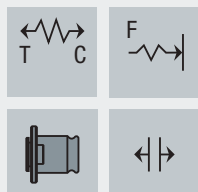
Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738



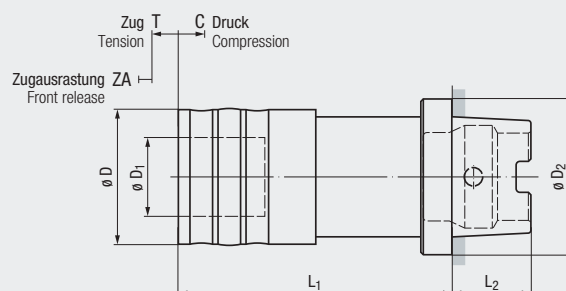
Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743

**KSN****HSK-C****DIN 69893-1**

Einsatz auf CNC-Bearbeitungszentren,  
sonstigen Werkzeugmaschinen und  
Säulenbohrmaschinen

For use on CNC machining centres,  
other machine tools and pillar  
drilling machines



| Typ<br>Type  |  |  | ø D <sub>2</sub> | ø D | ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | T    | C   | ZA  |  |
|--------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|------|-----|-----|-------------------------------------------------------------------------------------|
| <b>KSN 1</b> | M3 - M14<br>(Nr.4 - 9/16)                                                         | EM 01                                                                             | HSK-C32          | 36  | 19               | 65             | 16             | 8    | 5   | 2,1 | <b>F3301K01.30</b>                                                                  |
|              |                                                                                   |                                                                                   | HSK-C40          | 36  | 19               | 65             | 20             | 8    | 5   | 2,1 | <b>F3301K02.30</b>                                                                  |
|              |                                                                                   |                                                                                   | HSK-C50          | 36  | 19               | 67             | 25             | 8    | 5   | 2,1 | <b>F3301K03.30</b>                                                                  |
|              |                                                                                   |                                                                                   | HSK-C63          | 36  | 19               | 67             | 32             | 8    | 5   | 2,1 | <b>F3301K04.30</b>                                                                  |
| <b>KSN 3</b> | M4,5 - M24<br>(Nr.10 - 1")                                                        | EM 03                                                                             | HSK-C40          | 53  | 31               | 99             | 20             | 15   | 8,5 | 2,8 | <b>F3303K02.30</b>                                                                  |
|              |                                                                                   |                                                                                   | HSK-C50          | 53  | 31               | 101            | 25             | 15   | 8,5 | 2,8 | <b>F3303K03.30</b>                                                                  |
|              |                                                                                   |                                                                                   | HSK-C63          | 53  | 31               | 101            | 32             | 15   | 8,5 | 2,8 | <b>F3303K04.30</b>                                                                  |
| <b>KSN 4</b> | M14 - M36<br>(9/16 - 1 3/8)                                                       | EM 04                                                                             | HSK-C63          | 78  | 48               | 152            | 32             | 23,5 | 15  | 4,1 | <b>F3304K04.30</b>                                                                  |

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

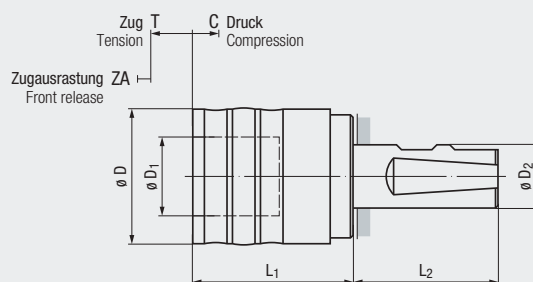
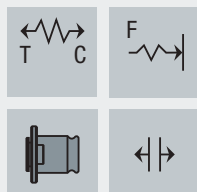
» 717 - 738





# KSN

**Zylinderschaft**  
Cylindrical shank  
**DIN 1835-1**  
Form B+E



Einsatz auf CNC-Bearbeitungszentren,  
sonstigen Werkzeugmaschinen und  
Säulenbohrmaschinen

For use on CNC machining centres,  
other machine tools and pillar  
drilling machines

| Typ<br>Type  |  |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | $L_1$ | $L_2$ | T    | C    | ZA  |  |
|--------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------|-------------------|-------|-------|------|------|-----|-------------------------------------------------------------------------------------|
| <b>KSN 0</b> | M1 - M10<br>(Nr.0 - 3/8)                                                          | EM 00                                                                             | 16                | 26              | 13                | 38    | 49    | 7,5  | 5    | 1,7 | <b>F3300G24</b>                                                                     |
|              |                                                                                   |                                                                                   | 20                | 26              | 13                | 38    | 51    | 7,5  | 5    | 1,7 | <b>F3300G25</b>                                                                     |
| <b>KSN 1</b> | M3 - M14<br>(Nr.4 - 9/16)                                                         | EM 01                                                                             | 16                | 36              | 19                | 39    | 49    | 8    | 5    | 2,1 | <b>F3301G24</b>                                                                     |
|              |                                                                                   |                                                                                   | 20                | 36              | 19                | 39    | 51    | 8    | 5    | 2,1 | <b>F3301G25</b>                                                                     |
|              |                                                                                   |                                                                                   | 25                | 36              | 19                | 39    | 57    | 8    | 5    | 2,1 | <b>F3301G26</b>                                                                     |
| <b>KSN 3</b> | M4,5 - M24<br>(Nr.10 - 1")                                                        | EM 03                                                                             | 25                | 53              | 31                | 63    | 57    | 15   | 8,5  | 2,8 | <b>F3303G26</b>                                                                     |
|              |                                                                                   |                                                                                   | 32                | 53              | 31                | 63    | 61    | 15   | 8,5  | 2,8 | <b>F3303G27</b>                                                                     |
| <b>KSN 4</b> | M14 - M36<br>(9/16 - 1 3/8)                                                       | EM 04                                                                             | 32                | 78              | 48                | 124   | 61    | 23,5 | 15   | 4,1 | <b>F3304G27</b>                                                                     |
| <b>KSN 5</b> | M22 - M48<br>(7/8 - 1 3/4)                                                        | EM 05                                                                             | 40                | 96              | 60                | 135,5 | 71    | 25   | 16,5 | 5,7 | <b>F3305G28</b>                                                                     |

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738



Adaptionsschäfte  
Adapter shanks

» 740

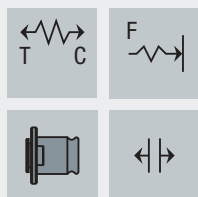


## KSN

## SK

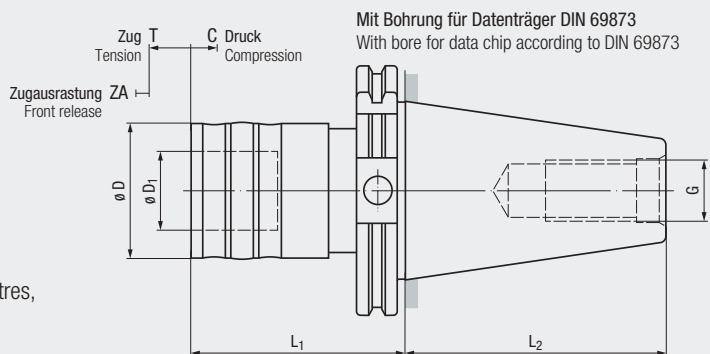
DIN ISO 7388-1

Form A



Einsatz auf CNC-Bearbeitungszentren,  
sonstigen Werkzeugmaschinen und  
Säulenbohrmaschinen

For use on CNC machining centres,  
other machine tools and pillar  
drilling machines



| Typ<br>Type  |  |  | SK    | $\emptyset D$ | $\emptyset D_1$ | $L_1$ | $L_2$  | G   | T    | C    | ZA  |  |
|--------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------|---------------|-----------------|-------|--------|-----|------|------|-----|--------------------------------------------------------------------------------------|
| <b>KSN 1</b> | M3 - M14<br>(Nr.4 - 9/16)                                                          | EM 01                                                                              | SK 40 | 36            | 19              | 60    | 68,4   | M16 | 8    | 5    | 2,1 | <b>F3301I51</b>                                                                      |
|              |                                                                                    |                                                                                    | SK 50 | 36            | 19              | 60    | 101,75 | M24 | 8    | 5    | 2,1 | <b>F3301I53</b>                                                                      |
| <b>KSN 3</b> | M4,5 - M24<br>(Nr.10 - 1")                                                         | EM 03                                                                              | SK 40 | 53            | 31              | 98    | 68,4   | M16 | 15   | 8,5  | 2,8 | <b>F3303I51</b>                                                                      |
|              |                                                                                    |                                                                                    | SK 50 | 53            | 31              | 84    | 101,75 | M24 | 15   | 8,5  | 2,8 | <b>F3303I53</b>                                                                      |
| <b>KSN 4</b> | M14 - M36<br>(9/16 - 1 3/8)                                                        | EM 04                                                                              | SK 40 | 78            | 48              | 150   | 68,4   | M16 | 23,5 | 15   | 4,1 | <b>F3304I51</b>                                                                      |
|              |                                                                                    |                                                                                    | SK 50 | 78            | 48              | 139   | 101,75 | M24 | 23,5 | 15   | 4,1 | <b>F3304I53</b>                                                                      |
| <b>KSN 5</b> | M22 - M48<br>(7/8 - 1 3/4)                                                         | EM 05                                                                              | SK 50 | 96            | 60              | 153   | 101,75 | M24 | 25   | 16,5 | 5,7 | <b>F3305I53</b>                                                                      |

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör

Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738



Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

HF

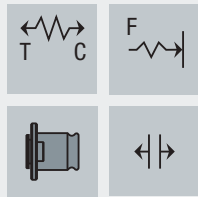
EM

Zubehör  
Accessories

# KSN

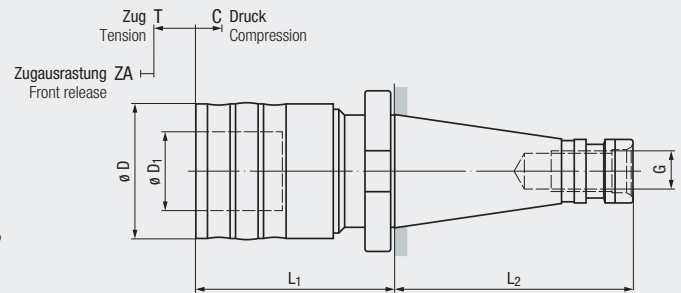
## SK

### DIN 2080-1 Form A



Einsatz auf CNC-Bearbeitungszentren,  
sonstigen Werkzeugmaschinen und  
Säulenbohrmaschinen

For use on CNC machining centres,  
other machine tools and pillar  
drilling machines



| Typ<br>Type  |                             |       | SK                  | ø D | ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | G   | T    | C    | ZA  |          |
|--------------|-----------------------------|-------|---------------------|-----|------------------|----------------|----------------|-----|------|------|-----|----------|
| <b>KSN 1</b> | M3 - M14<br>(Nr.4 - 9/16)   | EM 01 | SK 30 <sup>1)</sup> | 36  | 19               | 74             | 68,4           | M12 | 8    | 5    | 2,1 | F3301540 |
|              |                             |       | SK 40 <sup>1)</sup> | 36  | 19               | 61,6           | 93,4           | M16 | 8    | 5    | 2,1 | F3301541 |
|              |                             |       | SK 50 <sup>1)</sup> | 36  | 19               | 56             | 126,8          | M24 | 8    | 5    | 2,1 | F3301543 |
| <b>KSN 3</b> | M4,5 - M24<br>(Nr.10 - 1")  | EM 03 | SK 30               | 53  | 31               | 97             | 68,4           | M12 | 15   | 8,5  | 2,8 | F3303540 |
|              |                             |       | SK 40 <sup>1)</sup> | 53  | 31               | 85,6           | 93,4           | M16 | 15   | 8,5  | 2,8 | F3303541 |
|              |                             |       | SK 50 <sup>1)</sup> | 53  | 31               | 80             | 126,8          | M24 | 15   | 8,5  | 2,8 | F3303543 |
| <b>KSN 4</b> | M14 - M36<br>(9/16 - 1 3/8) | EM 04 | SK 40               | 78  | 48               | 143            | 93,4           | M16 | 23,5 | 15   | 4,1 | F3304541 |
|              |                             |       | SK 50 <sup>1)</sup> | 78  | 48               | 140            | 126,8          | M24 | 23,5 | 15   | 4,1 | F3304543 |
| <b>KSN 5</b> | M22 - M48<br>(7/8 - 1 3/4)  | EM 05 | SK 40               | 96  | 60               | 157            | 93,4           | M16 | 25   | 16,5 | 5,7 | F3305541 |
|              |                             |       | SK 50               | 96  | 60               | 141            | 126,8          | M24 | 25   | 16,5 | 5,7 | F3305543 |



<sup>1)</sup> Adaptierung über DIN 1835 B  
Adaptation by DIN 1835 B

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738

Informationen zur neuen **EG-Maschinenrichtlinie 2006/42/EG**,  
siehe Seite 614

Information regarding the new **EC Machinery Directive 2006/42/EC**,  
see page 614

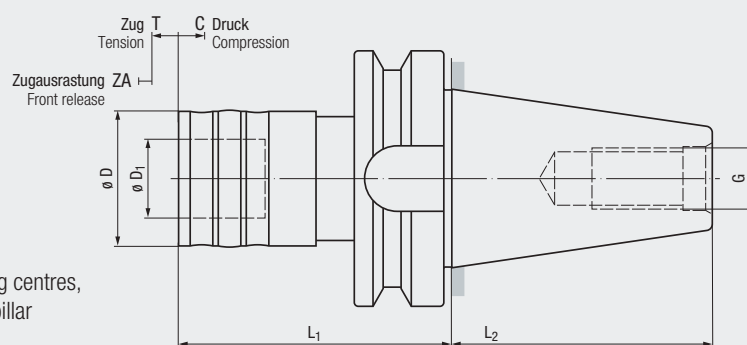
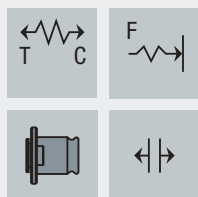


## KSN

## BT

DIN ISO 7388-2

Form J



Einsatz auf CNC-Bearbeitungszentren,  
sonstigen Werkzeugmaschinen und  
Säulenbohrmaschinen

For use on CNC machining centres,  
other machine tools and pillar  
drilling machines

| Typ<br>Type  |  |  | BT                  | ø D | ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | G   | T    | C    | ZA  |  |
|--------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------|-----|------------------|----------------|----------------|-----|------|------|-----|--------------------------------------------------------------------------------------|
| <b>KSN 1</b> | M3 - M14<br>(Nr.4 - 9/16)                                                          | EM 01                                                                              | BT 40 <sup>1)</sup> | 36  | 19               | 75             | 65,4           | M16 | 8    | 5    | 2,1 | <b>F3301I91</b>                                                                      |
|              |                                                                                    |                                                                                    | BT 50 <sup>1)</sup> | 36  | 19               | 84             | 101,8          | M24 | 8    | 5    | 2,1 | <b>F3301I93</b>                                                                      |
| <b>KSN 3</b> | M4,5 - M24<br>(Nr.10 - 1")                                                         | EM 03                                                                              | BT 40 <sup>1)</sup> | 53  | 31               | 99             | 65,4           | M16 | 15   | 8,5  | 2,8 | <b>F3303I91</b>                                                                      |
|              |                                                                                    |                                                                                    | BT 50 <sup>1)</sup> | 53  | 31               | 108            | 101,8          | M24 | 15   | 8,5  | 2,8 | <b>F3303I93</b>                                                                      |
| <b>KSN 4</b> | M14 - M36<br>(9/16 - 1 3/8)                                                        | EM 04                                                                              | BT 40               | 78  | 48               | 164            | 65,4           | M16 | 23,5 | 15   | 4,1 | <b>F3304I91</b>                                                                      |
|              |                                                                                    |                                                                                    | BT 50 <sup>1)</sup> | 78  | 48               | 169            | 101,8          | M24 | 23,5 | 15   | 4,1 | <b>F3304I93</b>                                                                      |
| <b>KSN 5</b> | M22 - M48<br>(7/8 - 1 3/4)                                                         | EM 05                                                                              | BT 50               | 96  | 60               | 165,5          | 101,8          | M24 | 25   | 16,5 | 5,7 | <b>F3305I93</b>                                                                      |

<sup>1)</sup> Adaptierung über DIN 1835 B  
Adaptation by DIN 1835 B

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör

Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738

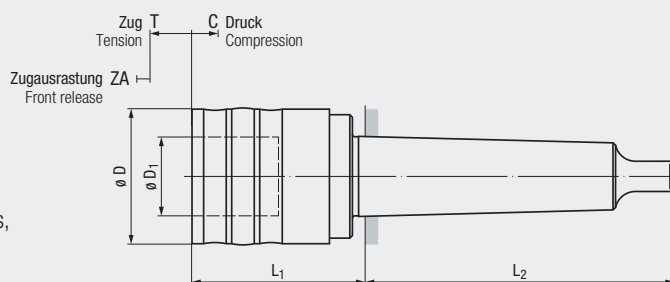
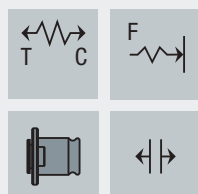


# KSN

## MK

### DIN 228-1

### Form B



Einsatz auf CNC-Bearbeitungszentren,  
sonstigen Werkzeugmaschinen und  
Säulenbohrmaschinen

For use on CNC machining centres,  
other machine tools and pillar  
drilling machines

| Typ<br>Type  |                             |       | MK   | Ø D | Ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | T    | C    | ZA  |                 |
|--------------|-----------------------------|-------|------|-----|------------------|----------------|----------------|------|------|-----|-----------------|
| <b>KSN 0</b> | M1 - M10<br>(Nr.0 - 3/8)    | EM 00 | MK 1 | 26  | 13               | 43,5           | 62             | 7,5  | 5    | 1,7 | <b>F3300101</b> |
|              |                             |       | MK 2 | 26  | 13               | 45             | 75             | 7,5  | 5    | 1,7 | <b>F3300102</b> |
| <b>KSN 1</b> | M3 - M14<br>(Nr.4 - 9/16)   | EM 01 | MK 2 | 36  | 19               | 47             | 75             | 8    | 5    | 2,1 | <b>F3301102</b> |
|              |                             |       | MK 3 | 36  | 19               | 47             | 94             | 8    | 5    | 2,1 | <b>F3301103</b> |
| <b>KSN 3</b> | M4,5 - M24<br>(Nr.10 - 1")  | EM 03 | MK 3 | 53  | 31               | 71             | 94             | 15   | 8,5  | 2,8 | <b>F3303103</b> |
|              |                             |       | MK 4 | 53  | 31               | 72             | 117,5          | 15   | 8,5  | 2,8 | <b>F3303104</b> |
|              |                             |       | MK 5 | 53  | 31               | 72,5           | 149,5          | 15   | 8,5  | 2,8 | <b>F3303105</b> |
| <b>KSN 4</b> | M14 - M36<br>(9/16 - 1 3/8) | EM 04 | MK 4 | 78  | 48               | 105            | 117,5          | 23,5 | 15   | 4,1 | <b>F3304104</b> |
|              |                             |       | MK 5 | 78  | 48               | 105,5          | 149,5          | 23,5 | 15   | 4,1 | <b>F3304105</b> |
| <b>KSN 5</b> | M22 - M48<br>(7/8 - 1 3/4)  | EM 05 | MK 5 | 96  | 60               | 116,5          | 149,5          | 25   | 16,5 | 5,7 | <b>F3305105</b> |
|              |                             |       | MK 6 | 96  | 60               | 118,5          | 210            | 25   | 16,5 | 5,7 | <b>F3305106</b> |

Morsekegelschaft mit Anzugsgewinde nach DIN 228-1 Form A auf Anfrage  
Morse taper shank with clamping thread acc. DIN 228-1 form A upon request

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories

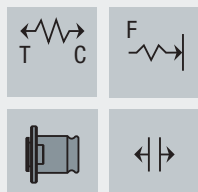
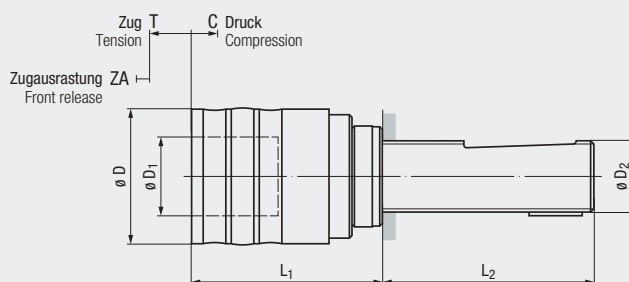


Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738



## KSN

Tr  
DIN 6327-3Einsatz auf CNC-Bearbeitungszentren,  
sonstigen Werkzeugmaschinen und  
SäulenbohrmaschinenFor use on CNC machining centres,  
other machine tools and pillar  
drilling machines

| Typ<br>Type  |  |  | Ø D <sub>2</sub> | Ø D | Ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | T    | C    | ZA  |  |
|--------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|------|------|-----|-------------------------------------------------------------------------------------|
| <b>KSN 0</b> | M1 - M10<br>(Nr.0 - 3/8)                                                          | EM 00                                                                             | Tr 16 x 1,5      | 26  | 13               | 50             | 73             | 7,5  | 5    | 1,7 | <b>F3300213</b>                                                                     |
|              |                                                                                   |                                                                                   | Tr 20 x 2        | 26  | 13               | 50             | 76             | 7,5  | 5    | 1,7 | <b>F3300214</b>                                                                     |
| <b>KSN 1</b> | M3 - M14<br>(Nr.4 - 9/16)                                                         | EM 01                                                                             | Tr 16 x 1,5      | 36  | 19               | 52             | 73             | 8    | 5    | 2,1 | <b>F3301213</b>                                                                     |
|              |                                                                                   |                                                                                   | Tr 20 x 2        | 36  | 19               | 52             | 76             | 8    | 5    | 2,1 | <b>F3301214</b>                                                                     |
|              |                                                                                   |                                                                                   | Tr 28 x 2        | 36  | 19               | 52             | 83             | 8    | 5    | 2,1 | <b>F3301216</b>                                                                     |
|              |                                                                                   |                                                                                   | Tr 36 x 2        | 36  | 19               | 54             | 104            | 8    | 5    | 2,1 | <b>F3301218</b>                                                                     |
| <b>KSN 3</b> | M4,5 - M24<br>(Nr.10 - 1")                                                        | EM 03                                                                             | Tr 20 x 2        | 53  | 31               | 76             | 76             | 15   | 8,5  | 2,8 | <b>F3303214</b>                                                                     |
|              |                                                                                   |                                                                                   | Tr 28 x 2        | 53  | 31               | 76             | 83             | 15   | 8,5  | 2,8 | <b>F3303216</b>                                                                     |
|              |                                                                                   |                                                                                   | Tr 36 x 2        | 53  | 31               | 78             | 104            | 15   | 8,5  | 2,8 | <b>F3303218</b>                                                                     |
| <b>KSN 4</b> | M14 - M36<br>(9/16 - 1 3/8)                                                       | EM 04                                                                             | Tr 28 x 2        | 78  | 48               | 109            | 83             | 23,5 | 15   | 4,1 | <b>F3304216</b>                                                                     |
|              |                                                                                   |                                                                                   | Tr 36 x 2        | 78  | 48               | 111            | 104            | 23,5 | 15   | 4,1 | <b>F3304218</b>                                                                     |
|              |                                                                                   |                                                                                   | Tr 48 x 2        | 78  | 48               | 115            | 126            | 23,5 | 15   | 4,1 | <b>F3304219</b>                                                                     |
| <b>KSN 5</b> | M22 - M48<br>(7/8 - 1 3/4)                                                        | EM 05                                                                             | Tr 36 x 2        | 96  | 60               | 122            | 104            | 25   | 16,5 | 5,7 | <b>F3305218</b>                                                                     |
|              |                                                                                   |                                                                                   | Tr 48 x 2        | 96  | 60               | 126            | 126            | 25   | 16,5 | 5,7 | <b>F3305219</b>                                                                     |

Weitere Ausführungen auf Anfrage  
Further designs upon requestZubehör  
AccessoriesSchnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

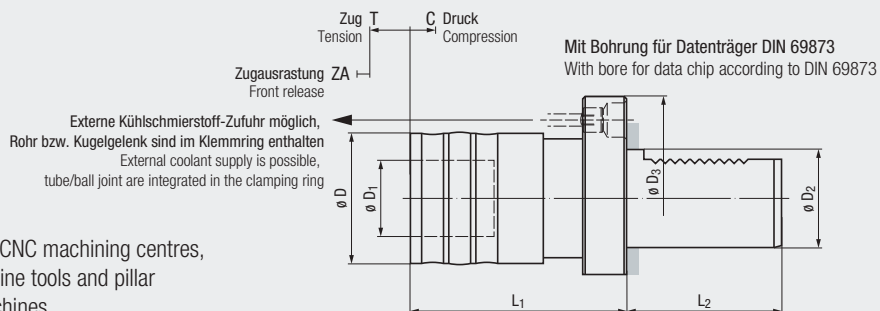
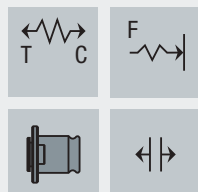
» 717 - 738



# KSN

## VDI

### DIN ISO 10889-1



Einsatz auf CNC-Bearbeitungszentren, sonstigen Werkzeugmaschinen und Säulenbohrmaschinen

For use on CNC machining centres, other machine tools and pillar drilling machines

| Typ<br>Type  |                             |       | $\varnothing D_2$ | $\varnothing D_3$ | $\varnothing D$ | $\varnothing D_1$ | $L_1$ | $L_2$ | T    | C    | ZA  |                 |
|--------------|-----------------------------|-------|-------------------|-------------------|-----------------|-------------------|-------|-------|------|------|-----|-----------------|
| <b>KSN 1</b> | M3 - M14<br>(Nr.4 - 9/16)   | EM 01 | 20                | 50                | 36              | 19                | 57    | 40    | 8    | 5    | 2,1 | <b>F3301430</b> |
|              |                             |       | 30                | 68                | 36              | 19                | 57    | 55    | 8    | 5    | 2,1 | <b>F3301431</b> |
|              |                             |       | 40                | 83                | 36              | 19                | 57    | 63    | 8    | 5    | 2,1 | <b>F3301432</b> |
|              |                             |       | 50                | 98                | 36              | 19                | 57    | 78    | 8    | 5    | 2,1 | <b>F3301433</b> |
| <b>KSN 3</b> | M4,5 - M24<br>(Nr.10 - 1")  | EM 03 | 30                | 68                | 53              | 31                | 88    | 55    | 15   | 8,5  | 2,8 | <b>F3303431</b> |
|              |                             |       | 40                | 83                | 53              | 31                | 88    | 63    | 15   | 8,5  | 2,8 | <b>F3303432</b> |
|              |                             |       | 50                | 98                | 53              | 31                | 88    | 78    | 15   | 8,5  | 2,8 | <b>F3303433</b> |
| <b>KSN 4</b> | M14 - M36<br>(9/16 - 1 3/8) | EM 04 | 40                | 83                | 78              | 48                | 123   | 63    | 23,5 | 15   | 4,1 | <b>F3304432</b> |
|              |                             |       | 50                | 98                | 78              | 48                | 123   | 78    | 23,5 | 15   | 4,1 | <b>F3304433</b> |
|              |                             |       | 60                | 123               | 78              | 48                | 123   | 94    | 23,5 | 15   | 4,1 | <b>F3304434</b> |
| <b>KSN 5</b> | M22 - M48<br>(7/8 - 1 3/4)  | EM 05 | 50                | 98                | 96              | 60                | 140   | 78    | 25   | 16,5 | 5,7 | <b>F3305433</b> |
|              |                             |       | 60                | 123               | 96              | 60                | 140   | 94    | 25   | 16,5 | 5,7 | <b>F3305434</b> |



Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

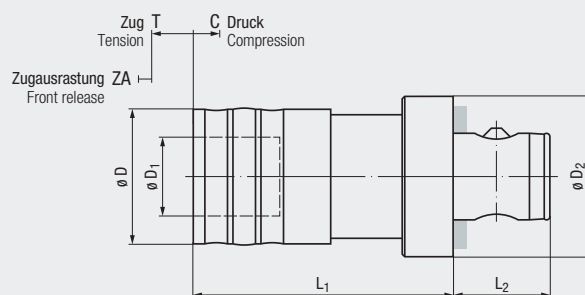
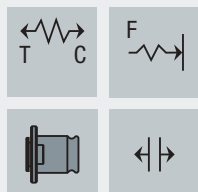
► 717 - 738





## KSN

**ABS®**  
(System KOMET)



Einsatz auf CNC-Bearbeitungszentren,  
sonstigen Werkzeugmaschinen und  
Säulenbohrmaschinen

For use on CNC machining centres,  
other machine tools and pillar  
drilling machines

| Typ<br>Type  |  |  | ø D <sub>2</sub> | ø D | ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | T    | C   | ZA  |  |
|--------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|------|-----|-----|-------------------------------------------------------------------------------------|
| <b>KSN 1</b> | M3 - M14<br>(Nr.4 - 9/16)                                                         | EM 01                                                                             | ABS 32           | 36  | 19               | 72             | 23             | 8    | 5   | 2,1 | <b>F3301L01</b>                                                                     |
|              |                                                                                   |                                                                                   | ABS 40           | 36  | 19               | 72             | 26             | 8    | 5   | 2,1 | <b>F3301L02</b>                                                                     |
|              |                                                                                   |                                                                                   | ABS 50           | 36  | 19               | 72             | 31             | 8    | 5   | 2,1 | <b>F3301L03</b>                                                                     |
|              |                                                                                   |                                                                                   | ABS 63           | 36  | 19               | 72             | 38             | 8    | 5   | 2,1 | <b>F3301L04</b>                                                                     |
| <b>KSN 3</b> | M4,5 - M24<br>(Nr.10 - 1")                                                        | EM 03                                                                             | ABS 50           | 53  | 31               | 102            | 31             | 15   | 8,5 | 2,8 | <b>F3303L03</b>                                                                     |
|              |                                                                                   |                                                                                   | ABS 63           | 53  | 31               | 102            | 38             | 15   | 8,5 | 2,8 | <b>F3303L04</b>                                                                     |
| <b>KSN 4</b> | M14 - M36<br>(9/16 - 1 3/8)                                                       | EM 04                                                                             | ABS 63           | 78  | 48               | 155            | 38             | 23,5 | 15  | 4,1 | <b>F3304L04</b>                                                                     |

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör

### Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738



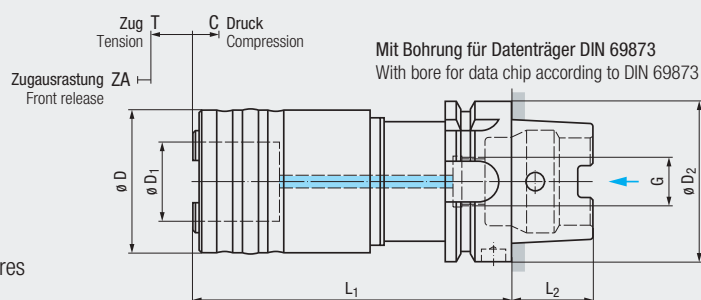
# KSN/HD

## HSK-A

DIN 69893-1



$p_{max}$   
50 bar  
(700 psi)



Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen

For use on CNC machining centres  
and other machine tools

| Typ<br>Type |  |  |                  |     |                  |                |                |           |     |    |     |  |
|-------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|-----------|-----|----|-----|-------------------------------------------------------------------------------------|
|             |                                                                                   |                                                                                   | ø D <sub>2</sub> | ø D | ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | G         | T   | C  | ZA  |                                                                                     |
| KSN 1/HD    | M3 - M14<br>(Nr.4 - 9/16)                                                         | EM 01                                                                             | HSK-A50          | 40  | 19               | 91             | 25             | M16 x 1   | 7,5 | 5  | 2,5 | F3101C03.1.30                                                                       |
|             |                                                                                   |                                                                                   | HSK-A63          | 40  | 19               | 93             | 32             | M18 x 1   | 7,5 | 5  | 2,5 | F3101C04.1.30                                                                       |
|             |                                                                                   |                                                                                   | HSK-A80          | 40  | 19               | 97             | 40             | M20 x 1,5 | 7,5 | 5  | 2,5 | F3101C05.1.30                                                                       |
|             |                                                                                   |                                                                                   | HSK-A100         | 40  | 19               | 98             | 50             | M24 x 1,5 | 7,5 | 5  | 2,5 | F3101C06.1.30                                                                       |
| KSN 3/HD    | M4,5 - M24<br>(Nr.10 - 1")                                                        | EM 03                                                                             | HSK-A50          | 56  | 31               | 140            | 25             | M16 x 1   | 10  | 7  | 3   | F3103C03.1.30                                                                       |
|             |                                                                                   |                                                                                   | HSK-A63          | 56  | 31               | 130            | 32             | M18 x 1   | 10  | 7  | 3   | F3103C04.1.30                                                                       |
|             |                                                                                   |                                                                                   | HSK-A80          | 56  | 31               | 133            | 40             | M20 x 1,5 | 10  | 7  | 3   | F3103C05.1.30                                                                       |
|             |                                                                                   |                                                                                   | HSK-A100         | 56  | 31               | 135            | 50             | M24 x 1,5 | 10  | 7  | 3   | F3103C06.1.30                                                                       |
| KSN 4/HD    | M14 - M36<br>(9/16 - 1 3/8)                                                       | EM 04                                                                             | HSK-A63          | 80  | 48               | 196            | 32             | M18 x 1   | 20  | 15 | 5   | F3104C04.1.30                                                                       |
|             |                                                                                   |                                                                                   | HSK-A100         | 80  | 48               | 198            | 50             | M24 x 1,5 | 20  | 15 | 5   | F3104C06.1.30                                                                       |
| KSN 5/HD    | M22 - M48<br>(7/8 - 1 3/4)                                                        | EM 05                                                                             | HSK-A100         | 95  | 60               | 270            | 50             | M24 x 1,5 | 23  | 18 | 10  | F3105C06.1.3                                                                        |



Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



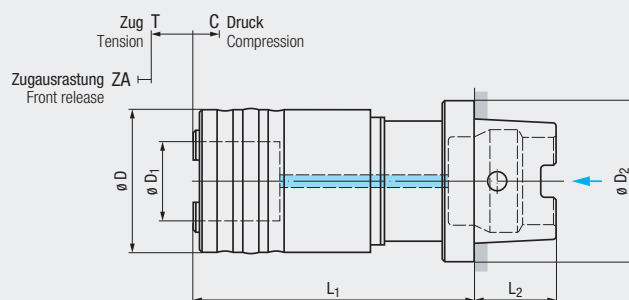
## KSN/HD

## HSK-C

DIN 69893-1



$p_{\max}$   
50 bar  
(700 psi)



Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen

For use on CNC machining centres  
and other machine tools

| Typ<br>Type |  |  | ø D <sub>2</sub> | ø D | ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | T   | C | ZA  |  |
|-------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|-----|---|-----|-------------------------------------------------------------------------------------|
| KSN 1/HD    | M3 - M14<br>(Nr.4 - 9/16)                                                         | EM 01                                                                             | HSK-C40          | 40  | 19               | 75             | 20             | 7,5 | 5 | 2,5 | <b>F3101K02.1.30</b>                                                                |
|             |                                                                                   |                                                                                   | HSK-C50          | 40  | 19               | 78             | 25             | 7,5 | 5 | 2,5 | <b>F3101K03.1.30</b>                                                                |
|             |                                                                                   |                                                                                   | HSK-C63          | 40  | 19               | 78             | 32             | 7,5 | 5 | 2,5 | <b>F3101K04.1.30</b>                                                                |
|             |                                                                                   |                                                                                   | HSK-C80          | 40  | 19               | 81             | 40             | 7,5 | 5 | 2,5 | F3101K05.1.30                                                                       |
|             |                                                                                   |                                                                                   | HSK-C100         | 40  | 19               | 81             | 50             | 7,5 | 5 | 2,5 | F3101K06.1.30                                                                       |
| KSN 3/HD    | M4,5 - M24<br>(Nr.10 - 1")                                                        | EM 03                                                                             | HSK-C50          | 56  | 31               | 118            | 25             | 10  | 7 | 3   | <b>F3103K03.1.30</b>                                                                |
|             |                                                                                   |                                                                                   | HSK-C63          | 56  | 31               | 110            | 32             | 10  | 7 | 3   | <b>F3103K04.1.30</b>                                                                |
|             |                                                                                   |                                                                                   | HSK-C80          | 56  | 31               | 113            | 40             | 10  | 7 | 3   | F3103K05.1.30                                                                       |
|             |                                                                                   |                                                                                   | HSK-C100         | 56  | 31               | 115            | 50             | 10  | 7 | 3   | F3103K06.1.30                                                                       |

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör

Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738



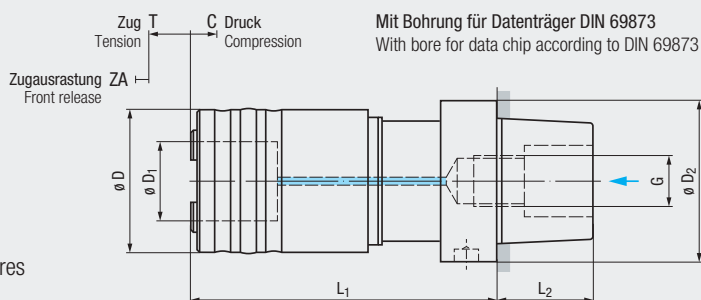
# KSN/HD

## PSC

ISO 26623-1



$p_{max}$   
50 bar  
(700 psi)



Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen

For use on CNC machining centres  
and other machine tools

| Typ<br>Type     |  |  |        | $\emptyset D_2$ | $\emptyset D$ | $\emptyset D_1$ | $L_1$ | $L_2$ | G       | T   | C  | ZA  |  |
|-----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|-----------------|---------------|-----------------|-------|-------|---------|-----|----|-----|-------------------------------------------------------------------------------------|
| <b>KSN 1/HD</b> | M3 - M14<br>(Nr. 4 - 9/16)                                                        | EM 01                                                                             | PSC 63 |                 | 40            | 19              | 86,5  | 38    | M20 x 2 | 7,5 | 5  | 2,5 | <b>F3101T06.1</b>                                                                   |
| <b>KSN 3/HD</b> | M4,5 - M24<br>(Nr. 10 - 1")                                                       | EM 03                                                                             | PSC 63 |                 | 56            | 31              | 120   | 38    | M20 x 2 | 10  | 7  | 3   | <b>F3103T06.1</b>                                                                   |
| <b>KSN 4/HD</b> | M14 - M36<br>(9/16 - 1 3/8)                                                       | EM 04                                                                             | PSC 63 |                 | 80            | 48              | 181   | 38    | M20 x 2 | 20  | 15 | 5   | <b>F3104T06.1</b>                                                                   |
|                 |                                                                                   |                                                                                   | PSC 80 |                 | 80            | 48              | 177   | 48    | M20 x 2 | 20  | 15 | 5   | <b>F3104T08.1</b>                                                                   |
| <b>KSN 5/HD</b> | M22 - M48<br>(7/8 - 1 3/4)                                                        | EM 05                                                                             | PSC 80 |                 | 95            | 60              | 267   | 48    | M20 x 2 | 23  | 18 | 10  | <b>F3105T08.1.3</b>                                                                 |

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738



## KSN/HD

**Zylinderschaft**  
Cylindrical shank  
DIN 1835-1  
Form B+E

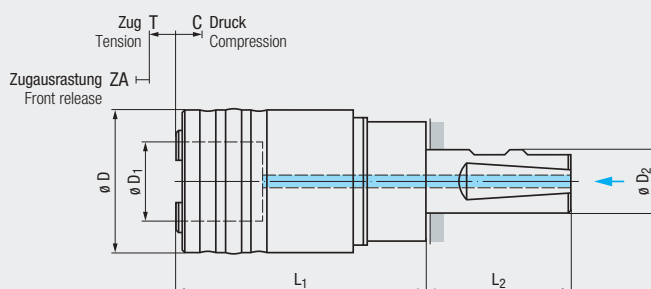


$p_{\max}$   
50 bar  
(700 psi)



Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen

For use on CNC machining centres  
and other machine tools



| Typ<br>Type     |  |  | ø D <sub>2</sub> | ø D | ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | T   | C  | ZA  |  |
|-----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|-----|----|-----|-------------------------------------------------------------------------------------|
| <b>KSN 1/HD</b> | M3 - M14<br>(Nr.4 - 9/16)                                                         | EM 01                                                                             | 25               | 40  | 19               | 62             | 57             | 7,5 | 5  | 2,5 | <b>F3101G26.1</b>                                                                   |
| <b>KSN 3/HD</b> | M4,5 - M24<br>(Nr.10 - 1")                                                        | EM 03                                                                             | 25               | 56  | 31               | 98             | 57             | 10  | 7  | 3   | <b>F3103G26.1</b>                                                                   |
| <b>KSN 4/HD</b> | M14 - M36<br>(9/16 - 1 3/8)                                                       | EM 04                                                                             | 32               | 80  | 48               | 147            | 61             | 20  | 15 | 5   | <b>F3104G27.1</b>                                                                   |
| <b>KSN 5/HD</b> | M22 - M48<br>(7/8 - 1 3/4)                                                        | EM 05                                                                             | 40               | 95  | 60               | 236            | 71             | 23  | 18 | 10  | <b>F3105G28.1.3</b>                                                                 |

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör

Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738



Adaptionsschäfte  
Adapter shanks

» 740

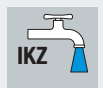


# KSN/HD

## SK

DIN ISO 7388-1

Form AD/AF

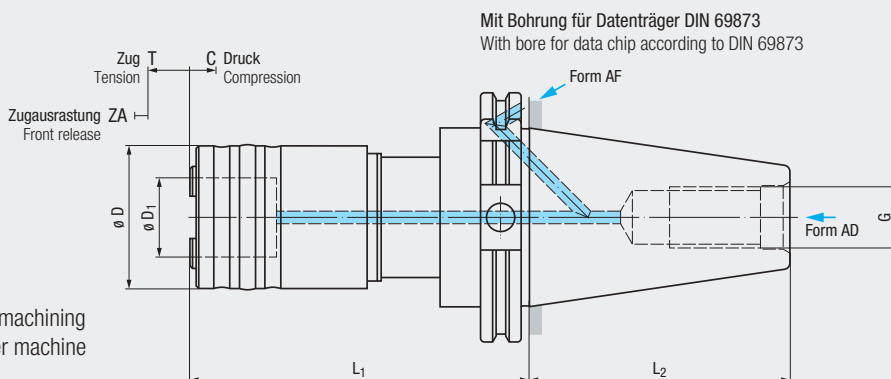


$p_{max}$   
50 bar  
(700 psi)



Einsatz auf CNC-Bearbeitungs-  
zentren und sonstigen  
Werkzeugmaschinen

For use on CNC machining  
centres and other machine  
tools



| Typ<br>Type     |                             |       | SK                     | Ø D | Ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | G   | T   | C  | ZA  |                   |
|-----------------|-----------------------------|-------|------------------------|-----|------------------|----------------|----------------|-----|-----|----|-----|-------------------|
| <b>KSN 1/HD</b> | M3 - M14<br>(Nr.4 - 9/16)   | EM 01 | SK 40 AD <sup>1)</sup> | 40  | 19               | 98             | 68,4           | M16 | 7,5 | 5  | 2,5 | <b>F3101I51.1</b> |
|                 |                             |       | SK 40 AF <sup>1)</sup> | 40  | 19               | 98             | 68,4           | M16 | 7,5 | 5  | 2,5 | F3101I51.2        |
|                 |                             |       | SK 50 AD <sup>1)</sup> | 40  | 19               | 98             | 101,75         | M24 | 7,5 | 5  | 2,5 | <b>F3101I53.1</b> |
|                 |                             |       | SK 50 AF <sup>1)</sup> | 40  | 19               | 98             | 101,75         | M24 | 7,5 | 5  | 2,5 | F3101I53.2        |
| <b>KSN 3/HD</b> | M4,5 - M24<br>(Nr.10 - 1")  | EM 03 | SK 40 AD <sup>1)</sup> | 56  | 31               | 134            | 68,4           | M16 | 10  | 7  | 3   | <b>F3103I51.1</b> |
|                 |                             |       | SK 40 AF <sup>1)</sup> | 56  | 31               | 134            | 68,4           | M16 | 10  | 7  | 3   | F3103I51.2        |
|                 |                             |       | SK 50 AD <sup>1)</sup> | 56  | 31               | 134            | 101,75         | M24 | 10  | 7  | 3   | <b>F3103I53.1</b> |
|                 |                             |       | SK 50 AF <sup>1)</sup> | 56  | 31               | 134            | 101,75         | M24 | 10  | 7  | 3   | F3103I53.2        |
| <b>KSN 4/HD</b> | M14 - M36<br>(9/16 - 1 3/8) | EM 04 | SK 50 AD <sup>1)</sup> | 80  | 48               | 183            | 101,75         | M24 | 20  | 15 | 5   | <b>F3104I53.1</b> |
| <b>KSN 5/HD</b> | M22 - M48<br>(7/8 - 1 3/4)  | EM 05 | SK 50 AD               | 95  | 60               | 220            | 101,75         | M24 | 23  | 18 | 10  | F3105I53.1.3      |

<sup>1)</sup> Adaptierung über DIN 1835 B  
Adaptation by DIN 1835 B

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738



Anzugsbolzen für Steilkegelschäfte  
siehe Seite 70

Pull studs for ISO taper shanks,  
see page 70

## KSN/HD

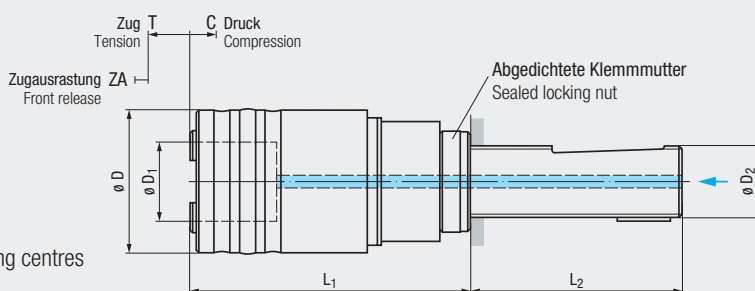
Tr  
DIN 6327-3

$p_{\max}$   
50 bar  
(700 psi)



Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen

For use on CNC machining centres  
and other machine tools



| Typ<br>Type |  |  | ø D <sub>2</sub> | ø D | ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | T   | C | ZA  |  |
|-------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|-----|---|-----|-------------------------------------------------------------------------------------|
| KSN 1/HD    | M3 - M14<br>(Nr.4 - 9/16)                                                         | EM 01                                                                             | Tr 20 x 2        | 40  | 19               | 79             | 71             | 7,5 | 5 | 2,5 | F3101214.1                                                                          |
|             |                                                                                   |                                                                                   | Tr 28 x 2        | 40  | 19               | 80             | 77             | 7,5 | 5 | 2,5 | F3101216.1                                                                          |
| KSN 3/HD    | M4,5 - M24<br>(Nr.10 - 1")                                                        | EM 03                                                                             | Tr 28 x 2        | 56  | 31               | 116            | 77             | 10  | 7 | 3   | F3103216.1                                                                          |
|             |                                                                                   |                                                                                   | Tr 36 x 2        | 56  | 31               | 118            | 98             | 10  | 7 | 3   | F3103218.1                                                                          |

Weitere Ausführungen auf Anfrage  
Further designs upon request

Zubehör  
Accessories

Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

►► 717 - 738





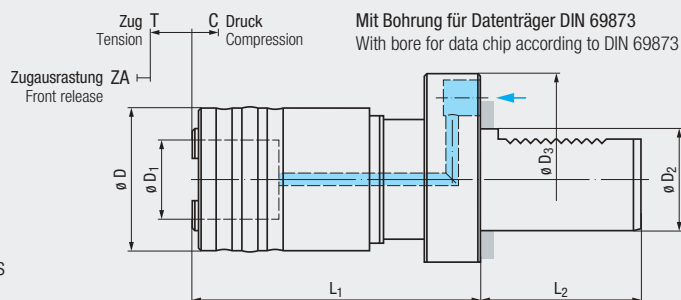
# KSN/HD

VDI

DIN ISO 10889-1



$p_{max}$   
50 bar  
(700 psi)



Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen

For use on CNC machining centres  
and other machine tools

| Typ<br>Type |                            |       | ø D <sub>2</sub> | ø D <sub>3</sub> | ø D | ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | T   | C | ZA  |            |
|-------------|----------------------------|-------|------------------|------------------|-----|------------------|----------------|----------------|-----|---|-----|------------|
| KSN 1/HD    | M3 - M14<br>(Nr.4 - 9/16)  | EM 01 | 30               | 68               | 40  | 19               | 77             | 55             | 7,5 | 5 | 2,5 | F3101431.1 |
|             |                            |       | 40               | 83               | 40  | 19               | 77             | 63             | 7,5 | 5 | 2,5 | F3101432.1 |
|             |                            |       | 50               | 98               | 40  | 19               | 77             | 78             | 7,5 | 5 | 2,5 | F3101433.1 |
| KSN 3/HD    | M4,5 - M24<br>(Nr.10 - 1") | EM 03 | 30               | 68               | 56  | 31               | 113            | 55             | 10  | 7 | 3   | F3103431.1 |
|             |                            |       | 40               | 83               | 56  | 31               | 113            | 63             | 10  | 7 | 3   | F3103432.1 |
|             |                            |       | 50               | 98               | 56  | 31               | 113            | 78             | 10  | 7 | 3   | F3103433.1 |



Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

► 717 - 738



## KSN/HD

**ABS®**  
(System KOMET)

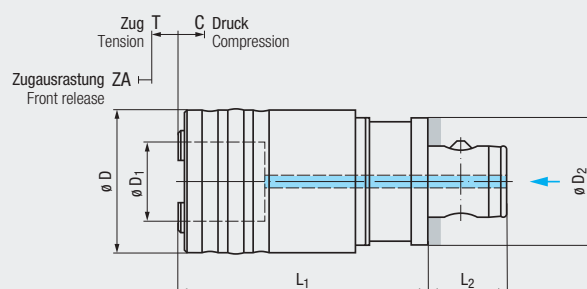


$p_{\max}$   
50 bar  
(700 psi)



Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen

For use on CNC machining centres  
and other machine tools



| Typ<br>Type     |  |  | ø D <sub>2</sub> | ø D | ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | T   | C | ZA  |  |
|-----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|-----|---|-----|-------------------------------------------------------------------------------------|
| <b>KSN 1/HD</b> | M3 - M14<br>(Nr.4 - 9/16)                                                         | EM 01                                                                             | ABS 32           | 40  | 19               | 69             | 23             | 7,5 | 5 | 2,5 | <b>F3101L01.1</b>                                                                   |
| <b>KSN 3/HD</b> | M4,5 - M24<br>(Nr.10 - 1")                                                        | EM 03                                                                             | ABS 50           | 56  | 31               | 98             | 31             | 10  | 7 | 3   | <b>F3103L03.1</b>                                                                   |

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör

Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738



# KSN/HD/ER

## HSK-A

DIN 69893-1

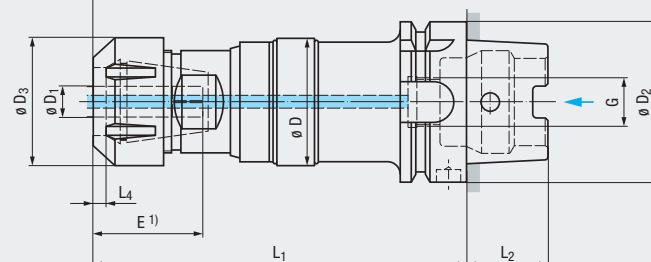


$p_{max}$   
50 bar  
(700 psi)



Zug T  
Tension  
C Druck  
Compression

Mit Bohrung für Datenträger DIN 69873  
With bore for data chip according to DIN 69873



Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen

For use on CNC machining centres  
and other machine tools

| Typ<br>Type |  | $\varnothing D_1$ |  |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $L_1$ | $L_2$ | $L_4$ | G         | T   | C |  |
|-------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------|-------------------|-------|-------|-------|-----------|-----|---|-------------------------------------------------------------------------------------|
| KSN 1/HD/ER | M4 - M12<br>(Nr.8 - 7/16)                                                         | 4,5 - 10          | ER 20 (GB)                                                                        | Hi-Q/ERMC<br>20                                                                   | HSK-A50           | 38              | 28                | 114   | 25    | 5     | M16 x 1   | 7,5 | 5 | F3231C03.1                                                                          |
|             |                                                                                   |                   |                                                                                   |                                                                                   | HSK-A63           | 38              | 28                | 116   | 32    | 5     | M18 x 1   | 7,5 | 5 | F3231C04.1                                                                          |
|             |                                                                                   |                   |                                                                                   |                                                                                   | HSK-A80           | 38              | 28                | 120   | 40    | 5     | M20 x 1,5 | 7,5 | 5 | F3231C05.1                                                                          |
|             |                                                                                   |                   |                                                                                   |                                                                                   | HSK-A100          | 38              | 28                | 121   | 50    | 5     | M24 x 1,5 | 7,5 | 5 | F3231C06.1                                                                          |
| KSN 3/HD/ER | M4 - M20<br>(Nr.8 - 3/4)                                                          | 4,5 - 16          | ER 32 (GB)                                                                        | Hi-Q/ERC<br>32                                                                    | HSK-A50           | 52              | 50                | 157   | 25    | 5     | M16 x 1   | 10  | 7 | F3233C03.1                                                                          |
|             |                                                                                   |                   |                                                                                   |                                                                                   | HSK-A63           | 52              | 50                | 147   | 32    | 5     | M18 x 1   | 10  | 7 | F3233C04.1                                                                          |
|             |                                                                                   |                   |                                                                                   |                                                                                   | HSK-A80           | 52              | 50                | 150   | 40    | 5     | M20 x 1,5 | 10  | 7 | F3233C05.1                                                                          |
|             |                                                                                   |                   |                                                                                   |                                                                                   | HSK-A100          | 52              | 50                | 152   | 50    | 5     | M24 x 1,5 | 10  | 7 | F3233C06.1                                                                          |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

## Zubehör Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und Kühlschleiben Typ KS/ER  
Sealing disks type DS/ER and coolant flush disks type KS/ER

» 750



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



Spannschlüsselsatz  
Set of clamping wrenches

» 758

## KSN/HD/ER

## HSK-C

DIN 69893-1

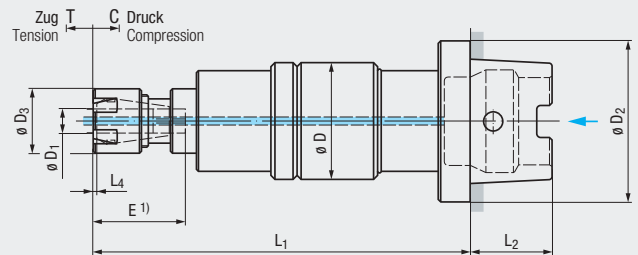


$p_{\max}$   
50 bar  
(700 psi)



Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen

For use on CNC machining centres  
and other machine tools



| Typ<br>Type |  | $\varnothing D_1$ |  |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $L_1$<br>ER | $L_1$<br>ER-GB | $L_2$ | $L_4$ | T | C |            |
|-------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------|-------------------|-------------|----------------|-------|-------|---|---|------------|
| KSN 0/HD/ER | M2 - M8<br>(Nr.0 - Nr.6)                                                          | 2,5 - 6           | ER 11 (GB)                                                                        | Hi-Q/ERM<br>11                                                                    | HSK-C32           | 29              | 16                | 97,3        | 95,5           | 16    | 0,9   | 6 | 6 | F3230K01.1 |
|             |                                                                                   |                   |                                                                                   |                                                                                   | HSK-C40           | 29              | 16                | 97,3        | 95,5           | 20    | 0,9   | 6 | 6 | F3230K02.1 |



<sup>1)</sup> Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannmutter ohne integrierte Abdichtung ist im Lieferumfang enthalten  
Clamping nut without integrated seal is included in the delivery

## Zubehör

## Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Spannmutter mit integrierter Abdichtung Typ Hi-Q/ERM 11  
Clamping nut with integrated seal, type Hi-Q/ERM 11

» 752



Spannschlüsselsatz  
Set of clamping wrenches

» 758



# KSN/HD/ER

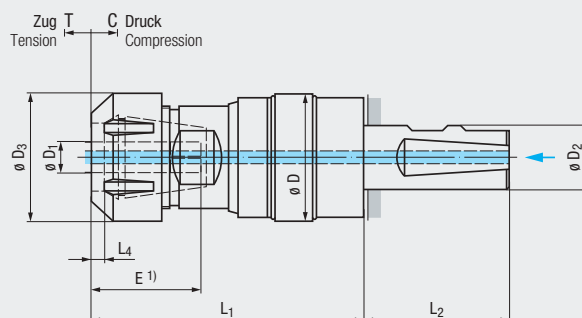
**Zylinderschaft**  
Cylindrical shank

**DIN 1835-1**

**Form B+E**



$p_{max}$   
50 bar  
(700 psi)



**Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen**

For use on CNC machining centres  
and other machine tools

| Typ<br>Type        |  | $\varnothing D_1$ |  |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $L_1$ | $L_2$ | $L_4$ | T   | C |  |
|--------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------|-------------------|-------|-------|-------|-----|---|-------------------------------------------------------------------------------------|
| <b>KSN 1/HD/ER</b> | M4 - M12<br>(Nr.8 - 7/16)                                                         | 4,5 - 10          | ER 20 (GB)                                                                        | Hi-Q/ERMC<br>20                                                                   | 25                | 38              | 28                | 85    | 57    | 5     | 7,5 | 5 | <b>F3231G26.1</b>                                                                   |
| <b>KSN 3/HD/ER</b> | M4 - M20<br>(Nr.8 - 3/4)                                                          | 4,5 - 16          | ER 32 (GB)                                                                        | Hi-Q/ERC<br>32                                                                    | 25                | 52              | 50                | 115   | 57    | 5     | 10  | 7 | <b>F3233G26.1</b>                                                                   |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

## Zubehör Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und Kühlschleiben Typ KS/ER  
Sealing disks type DS/ER and coolant flush disks type KS/ER

» 750



Spannschlüsselsatz  
Set of clamping wrenches

» 758



Adaptionsschäfte  
Adapter shanks

» 740



## KSN/HD/PGR

powRgrip®

## HSK-A

DIN 69893-1

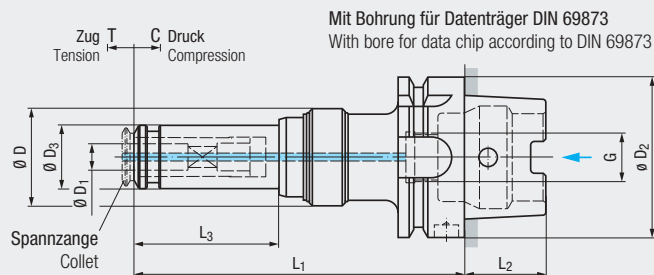


$p_{max}$   
50 bar  
(700 psi)



Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen

For use on CNC machining centres  
and other machine tools



| Typ<br>Type  |  | Ø D <sub>1</sub> |  | Ø D <sub>2</sub> | Ø D | Ø D <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>3</sub> | G         | T   | C |  |
|--------------|-----------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|----------------|-----------|-----|---|-------------------------------------------------------------------------------------|
| KSN 1/HD/PGR | M4 - M12<br>(Nr.8 - 7/16)                                                         | 4,5 - 10         | PGR 15 GB                                                                         | HSK-A50          | 38  | 24               | 124            | 25             | 55             | M16 x 1   | 7,5 | 5 | F3241C03.1                                                                          |
|              |                                                                                   |                  |                                                                                   | HSK-A63          | 38  | 24               | 126            | 32             | 55             | M18 x 1   | 7,5 | 5 | <b>F3241C04.1</b>                                                                   |
|              |                                                                                   |                  |                                                                                   | HSK-A80          | 38  | 24               | 130            | 40             | 55             | M20 x 1,5 | 7,5 | 5 | F3241C05.1                                                                          |
|              |                                                                                   |                  |                                                                                   | HSK-A100         | 38  | 24               | 131            | 50             | 55             | M24 x 1,5 | 7,5 | 5 | F3241C06.1                                                                          |
| KSN 3/HD/PGR | M8 - M20<br>(5/16 - 3/4)                                                          | 8 - 16           | PGR 25 GB                                                                         | HSK-A50          | 52  | 40               | 170            | 25             | 66,5           | M16 x 1   | 10  | 7 | F3243C03.1                                                                          |
|              |                                                                                   |                  |                                                                                   | HSK-A63          | 52  | 40               | 160            | 32             | 66,5           | M18 x 1   | 10  | 7 | <b>F3243C04.1</b>                                                                   |
|              |                                                                                   |                  |                                                                                   | HSK-A80          | 52  | 40               | 163            | 40             | 66,5           | M20 x 1,5 | 10  | 7 | F3243C05.1                                                                          |
|              |                                                                                   |                  |                                                                                   | HSK-A100         | 52  | 40               | 165            | 50             | 66,5           | M24 x 1,5 | 10  | 7 | F3243C06.1                                                                          |

Weitere Ausführungen auf Anfrage  
Further designs upon request

Zubehör  
Accessories

Spannzangen Typ PGR-GB  
Collets type PGR-GB

» 749



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



# KSN/HD/PGR

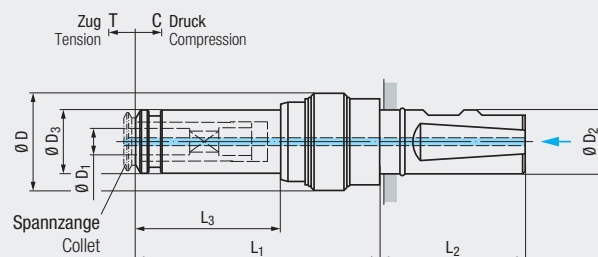
**Zylinderschaft**  
Cylindrical shank

**DIN 1835-1**

**Form B+E**



$p_{max}$   
50 bar  
(700 psi)



**Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen**

For use on CNC machining centres  
and other machine tools

| Typ<br>Type         |  | $\varnothing D_1$ |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $L_1$ | $L_2$ | $L_3$ | T   | C |  |
|---------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-------------------|-----------------|-------------------|-------|-------|-------|-----|---|-------------------------------------------------------------------------------------|
| <b>KSN 1/HD/PGR</b> | M4 - M12<br>(Nr.8 - 7/16)                                                         | 4,5 - 10          | PGR 15 GB                                                                         | 25                | 38              | 24                | 95    | 57    | 55    | 7,5 | 5 | F3241G26.1                                                                          |
| <b>KSN 3/HD/PGR</b> | M8 - M20<br>(5/16 - 3/4)                                                          | 8 - 16            | PGR 25 GB                                                                         | 25                | 52              | 40                | 127,5 | 57    | 66,5  | 10  | 7 | F3243G26.1                                                                          |

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



Adaptionsschäfte  
Adapter shanks

» 740



Spannzangen Typ PGR-GB  
Collets type PGR-GB

» 749





## KSN/Synchro

## HSK-A

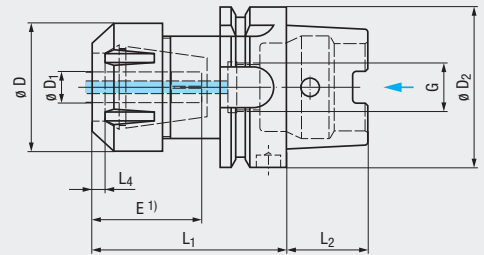
DIN 69893-1



$p_{\max}$   
100 bar  
(1400 psi)



Mit Bohrung für Datenträger DIN 69873  
With bore for data chip according to DIN 69873



| Typ<br>Type               |  | $\varnothing D_1$ |  |  | $\varnothing D_2$ | $\varnothing D$ | $L_1$ | $L_2$ | $L_4$ | G         |  |
|---------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------|-------|-------|-------|-----------|-------------------------------------------------------------------------------------|
| <b>KSN 1/<br/>Synchro</b> | M4 - M12<br>(Nr.8 - 1/2)                                                          | 4,5 - 10          | ER 20 (GB)                                                                        | Hi-Q/ERC<br>20                                                                    | HSK-A50           | 34              | 68    | 25    | 5     | M16 x 1   | F3131C03.1.30                                                                       |
|                           |                                                                                   |                   |                                                                                   |                                                                                   | HSK-A63           | 34              | 68    | 32    | 5     | M18 x 1   | <b>F3131C04.1.30</b>                                                                |
|                           |                                                                                   |                   |                                                                                   |                                                                                   | HSK-A100          | 34              | 74    | 50    | 5     | M24 x 1,5 | <b>F3131C06.1.30</b>                                                                |
| <b>KSN 3/<br/>Synchro</b> | M4 - M20<br>(Nr.8 - 3/4)                                                          | 4,5 - 16          | ER 32 (GB)                                                                        | Hi-Q/ERC<br>32                                                                    | HSK-A50           | 50              | 76    | 25    | 5     | M16 x 1   | <b>F3133C03.1.30</b>                                                                |
|                           |                                                                                   |                   |                                                                                   |                                                                                   | HSK-A63           | 50              | 77    | 32    | 5     | M18 x 1   | <b>F3133C04.1.30</b>                                                                |
|                           |                                                                                   |                   |                                                                                   |                                                                                   | HSK-A100          | 50              | 84,5  | 50    | 5     | M24 x 1,5 | <b>F3133C06.1.30</b>                                                                |
| <b>KSN 4/<br/>Synchro</b> | M10 - M30<br>(3/8 - 1 1/4)                                                        | 7 - 22            | ER 40 (GB)                                                                        | Hi-Q/ERC<br>40                                                                    | HSK-A63           | 63              | 80    | 32    | 5     | M18 x 1   | <b>F3134C04.1.30</b>                                                                |
|                           |                                                                                   |                   |                                                                                   |                                                                                   | HSK-A100          | 63              | 91    | 50    | 5     | M24 x 1,5 | <b>F3134C06.1.30</b>                                                                |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

## Zubehör

## Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und Kühlschleiben Typ KS/ER  
Sealing disks type DS/ER and coolant flush disks type KS/ER

» 750



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



Spannschlüssel  
Clamping wrench

» 758

Product  
FinderSoft-  
synchroSpeed-  
synchro

KSN

MQL  
MMS

SFB

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

# KSN/Synchro

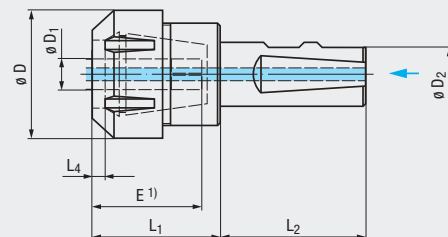
**Zylinderschaft**  
Cylindrical shank

DIN 1835-1

Form B+E



$p_{max}$   
100 bar  
(1400 psi)



| Typ<br>Type               |                            | $\varnothing D_1$ |            |                | $\varnothing D_2$ | $\varnothing D$ | $L_1$ | $L_2$ | $L_4$ |                      |
|---------------------------|----------------------------|-------------------|------------|----------------|-------------------|-----------------|-------|-------|-------|----------------------|
| <b>KSN 1/<br/>Synchro</b> | M4 - M12<br>(Nr.8 - 1/2)   | 4,5 - 10          | ER 20 (GB) | Hi-Q/ERC<br>20 | 25                | 34              | 42    | 57    | 5     | <b>F3131G26.1.24</b> |
| <b>KSN 3/<br/>Synchro</b> | M4 - M20<br>(Nr.8 - 3/4)   | 4,5 - 16          | ER 32 (GB) | Hi-Q/ERC<br>32 | 25                | 50              | 56    | 57    | 5     | <b>F3133G26.1.24</b> |
| <b>KSN 4/<br/>Synchro</b> | M10 - M30<br>(3/8 - 1 1/4) | 7 - 22            | ER 40 (GB) | Hi-Q/ERC<br>40 | 25                | 63              | 65    | 57    | 5     | <b>F3134G26.1.24</b> |



1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

## Zubehör Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und Kühlschleiben Typ KS/ER  
Sealing disks type DS/ER and coolant flush disks type KS/ER

» 750



Spannschlüssel  
Clamping wrench

» 758



Adaptionsschäfte  
Adapter shanks

» 740





## Typenreihen für Minimalmengenschmierung Minimum Quantity Lubrication Series

### Einsatz auf Maschinen mit Minimalmengenschmierung (MMS)

Strömungsoptimierte Übergabe des MMS-Mediums von der Maschinenspindel zum Gewindewerkzeug.

### Application on machines with minimum-quantity lubrication (MQL)

Flow-optimised transfer of the MQL medium from machine spindle to threading tool.



# Softsynchro® Modular/MQL

## HSK-A

DIN 69893-1


MQL  
1

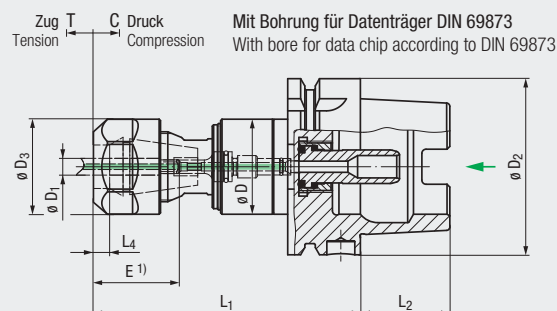
$p_{max}$   
10 bar  
(140 psi)

$\leftarrow \rightarrow$   
T C  
Soft



L+ 2 mm

Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle


| Typ<br>Type                      |  | $\varnothing D_1$ | Werkzeugkegel<br>Tool taper                                                                                                |  |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $L_1$ | $L_2$ | $L_4$ | T   | C   |  |
|----------------------------------|-----------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------|-------------------|-------|-------|-------|-----|-----|-------------------------------------------------------------------------------------|
| Softsynchro®<br>1<br>Modular/MQL | M4,5 - M10                                                                        | 6 / 7             | Innenkegel<br>Internal taper<br>60°<br> | ER 20 (GB)                                                                        | Hi-Q/ERC<br>20                                                                    | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.53.I01                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.53.I01                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.53.I01                                                                     |
|                                  | M8, M9,<br>M11, M12                                                               | 8 / 9             |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.53.I02                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.53.I02                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.53.I02                                                                     |
|                                  | M10                                                                               | 10                |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.53.I03                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.53.I03                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.53.I03                                                                     |
|                                  | M4,5 - M6<br>M8                                                                   | 6                 | Außenkegel<br>External taper<br>90°<br> | ER 20 (GB)                                                                        | Hi-Q/ERC<br>20                                                                    | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.53.A04                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.53.A04                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.53.A04                                                                     |
|                                  | M7, M10                                                                           | 7                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.53.A05                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.53.A05                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.53.A05                                                                     |
|                                  | M8                                                                                | 8                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.53.A06                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.53.A06                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.53.A06                                                                     |
|                                  | M12                                                                               | 9                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.53.A07                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.53.A07                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.53.A07                                                                     |
|                                  | M10                                                                               | 10                |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.53.A08                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.53.A08                                                                     |
|                                  |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.53.A08                                                                     |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Kühlschmierstoffrohr und Längeneinstellschraube sind Bestandteile der Spannzangen-Aufnahme und für eine optimale MMS-Übergabe notwendig  
Coolant-lubricant tube and length adjustment screw are included in collet holder and required for optimum MQL transfer

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

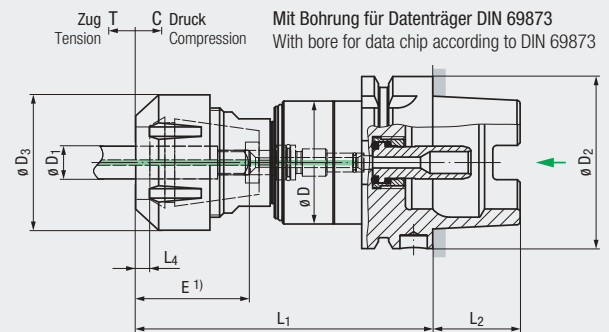
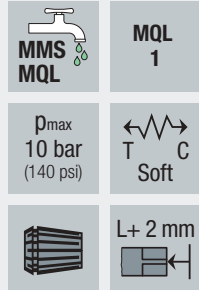
MMS-Übergabe passend zu DIN 69090-4 und vielen Werknormen  
MQL supply according to DIN 69090-4 and many internal standards



## Softsynchro® Modular/MQL

HSK-A

DIN 69893-1

Einsatz auf Maschinen  
mit SynchronspindelFor use on machines  
with synchronous spindle

| Typ<br>Type                      |           | $\emptyset D_1$ | Werkzeugkegel<br>Tool taper             |            |                | $\emptyset D_2$ | $\emptyset D$ | $\emptyset D_3$ | $L_1$ | $L_2$ | $L_4$ | T   | C   |                 |
|----------------------------------|-----------|-----------------|-----------------------------------------|------------|----------------|-----------------|---------------|-----------------|-------|-------|-------|-----|-----|-----------------|
| Softsynchro®<br>3<br>Modular/MQL | M12       | 9               | Innenkegel<br>Internal taper<br>60°<br> | ER 32 (GB) | Hi-Q/ERC<br>32 | HSK-A63         | 45            | 50              | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.53.I01 |
|                                  |           |                 |                                         |            |                | HSK-A100        | 45            | 50              | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.53.I01 |
|                                  | M10 - M16 | 10 - 12         |                                         |            |                | HSK-A63         | 45            | 50              | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.53.I02 |
|                                  |           |                 |                                         |            |                | HSK-A100        | 45            | 50              | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.53.I02 |
|                                  | M18 - M20 | 14 - 16         |                                         |            |                | HSK-A63         | 45            | 50              | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.53.I03 |
|                                  |           |                 |                                         |            |                | HSK-A100        | 45            | 50              | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.53.I03 |
|                                  | M12       | 9               | Außenkegel<br>External taper<br>90°<br> | ER 32 (GB) | Hi-Q/ERC<br>32 | HSK-A63         | 45            | 50              | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.53.A04 |
|                                  |           |                 |                                         |            |                | HSK-A100        | 45            | 50              | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.53.A04 |
|                                  | M10       | 10              |                                         |            |                | HSK-A63         | 45            | 50              | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.53.A05 |
|                                  |           |                 |                                         |            |                | HSK-A100        | 45            | 50              | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.53.A05 |
|                                  | M14 - M16 | 11 - 12         |                                         |            |                | HSK-A63         | 45            | 50              | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.53.A06 |
|                                  |           |                 |                                         |            |                | HSK-A100        | 45            | 50              | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.53.A06 |
|                                  | M18       | 14              |                                         |            |                | HSK-A63         | 45            | 50              | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.53.A07 |
|                                  |           |                 |                                         |            |                | HSK-A100        | 45            | 50              | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.53.A07 |
|                                  | M20       | 16              |                                         |            |                | HSK-A63         | 45            | 50              | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.53.A08 |
|                                  |           |                 |                                         |            |                | HSK-A100        | 45            | 50              | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.53.A08 |

## Zubehör

## Accessories

Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747

Dichtscheiben Typ DS/ER  
Sealing disks type DS/ER

» 750

Längeneinstellschrauben  
Length adjustment screws

» 744

Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743

Spann Schlüsselsatz  
Set of clamping wrenches

» 758

Montagevorrichtung  
Assembly device

» 756

Drehmomentschlüssel  
Torque wrenches

» 759



# Softsynchro® Modular/MQL

## HSK-A

### DIN 69893-1


**MQL 2**

$p_{max}$   
10 bar  
(140 psi)

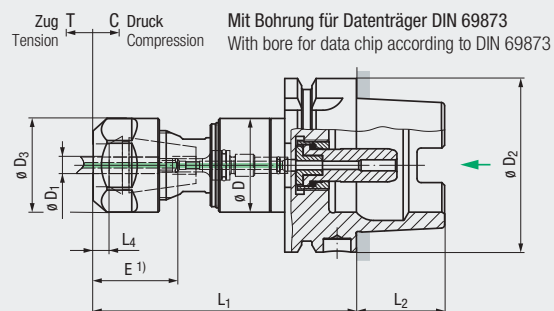
Soft



L+ 2 mm

**Einsatz auf Maschinen mit Synchronspindel**

For use on machines with synchronous spindle



| Typ<br>Type                               |  | $\varnothing D_1$ | Werkzeugkegel<br>Tool taper                                                                                                |  |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $L_1$ | $L_2$ | $L_4$ | T   | C   |  |
|-------------------------------------------|-----------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------|-------------------|-------|-------|-------|-----|-----|-------------------------------------------------------------------------------------|
| <b>Softsynchro®<br/>1<br/>Modular/MQL</b> | M4,5 - M10                                                                        | 6 / 7             | Innenkegel<br>Internal taper<br>60°<br> | ER 20 (GB)                                                                        | Hi-Q/ERC<br>20                                                                    | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.54.I01                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.54.I01                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.54.I01                                                                     |
|                                           | M8, M9, M11, M12                                                                  | 8 / 9             |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.54.I02                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.54.I02                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.54.I02                                                                     |
|                                           | M10                                                                               | 10                |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.54.I03                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.54.I03                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.54.I03                                                                     |
|                                           | M4,5 - M6 M8                                                                      | 6                 | Außenkegel<br>External taper<br>90°<br> | ER 20 (GB)                                                                        | Hi-Q/ERC<br>20                                                                    | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.54.A04                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.54.A04                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.54.A04                                                                     |
|                                           | M7, M10                                                                           | 7                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.54.A05                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.54.A05                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.54.A05                                                                     |
|                                           | M8                                                                                | 8                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.54.A06                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.54.A06                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.54.A06                                                                     |
|                                           | M12                                                                               | 9                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.54.A07                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.54.A07                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.54.A07                                                                     |
|                                           | M10                                                                               | 10                |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40           | 34              | 34                | 89,5  | 20    | 5     | 0,5 | 0,5 | F3551C02.54.A08                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3551C04.54.A08                                                                     |
|                                           |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | F3551C06.54.A08                                                                     |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Kühlschmierstoffrohr und Längeneinstellschraube sind Bestandteile der Spannzangen-Aufnahme und für eine optimale MMS-Übergabe notwendig  
Coolant-lubricant tube and length adjustment screw are included in collet holder and required for optimum MQL transfer

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

MMS-Übergabe passend zu DIN 69090-4 und vielen Werknormen  
MQL supply according to DIN 69090-4 and many internal standards

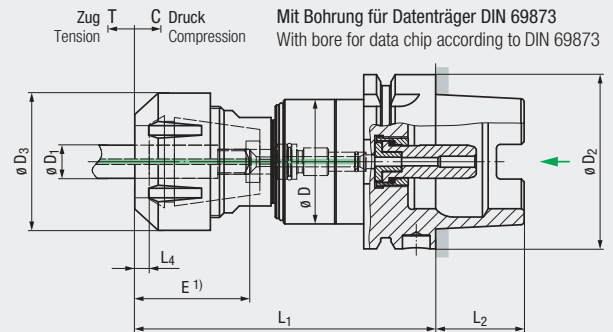
## Softsynchro® Modular/MQL

HSK-A

DIN 69893-1

MQL  
2p<sub>max</sub>  
10 bar  
(140 psi)T C  
Soft

L+ 2 mm

Einsatz auf Maschinen  
mit SynchronspindelFor use on machines  
with synchronous spindle

| Typ<br>Type                      |  | ø D <sub>1</sub> | Werkzeugkegel<br>Tool taper                                                                                                |  |  | ø D <sub>2</sub> | ø D | ø D <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>4</sub> | T   | C   |  |
|----------------------------------|-----------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|----------------|-----|-----|-------------------------------------------------------------------------------------|
| Softsynchro®<br>3<br>Modular/MQL | M12                                                                               | 9                | Innenkegel<br>Internal taper<br>60°<br> | ER 32 (GB)                                                                        | Hi-Q/ERC<br>32                                                                    | HSK-A63          | 45  | 50               | 108,8          | 32             | 5              | 0,5 | 0,5 | F3553C04.54.I01                                                                     |
|                                  |                                                                                   |                  |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100         | 45  | 50               | 115,3          | 50             | 5              | 0,5 | 0,5 | F3553C06.54.I01                                                                     |
|                                  | M10 - M16                                                                         | 10 - 12          |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63          | 45  | 50               | 108,8          | 32             | 5              | 0,5 | 0,5 | F3553C04.54.I02                                                                     |
|                                  |                                                                                   |                  |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100         | 45  | 50               | 115,3          | 50             | 5              | 0,5 | 0,5 | F3553C06.54.I02                                                                     |
|                                  | M18 - M20                                                                         | 14 - 16          |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63          | 45  | 50               | 108,8          | 32             | 5              | 0,5 | 0,5 | F3553C04.54.I03                                                                     |
|                                  |                                                                                   |                  |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100         | 45  | 50               | 115,3          | 50             | 5              | 0,5 | 0,5 | F3553C06.54.I03                                                                     |
|                                  | M12                                                                               | 9                | Außenkegel<br>External taper<br>90°<br> | ER 32 (GB)                                                                        | Hi-Q/ERC<br>32                                                                    | HSK-A63          | 45  | 50               | 108,8          | 32             | 5              | 0,5 | 0,5 | F3553C04.54.A04                                                                     |
|                                  |                                                                                   |                  |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100         | 45  | 50               | 115,3          | 50             | 5              | 0,5 | 0,5 | F3553C06.54.A04                                                                     |
|                                  | M10                                                                               | 10               |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63          | 45  | 50               | 108,8          | 32             | 5              | 0,5 | 0,5 | F3553C04.54.A05                                                                     |
|                                  |                                                                                   |                  |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100         | 45  | 50               | 115,3          | 50             | 5              | 0,5 | 0,5 | F3553C06.54.A05                                                                     |
|                                  | M14 - M16                                                                         | 11 - 12          |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63          | 45  | 50               | 108,8          | 32             | 5              | 0,5 | 0,5 | F3553C04.54.A06                                                                     |
|                                  |                                                                                   |                  |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100         | 45  | 50               | 115,3          | 50             | 5              | 0,5 | 0,5 | F3553C06.54.A06                                                                     |
|                                  | M18                                                                               | 14               |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63          | 45  | 50               | 108,8          | 32             | 5              | 0,5 | 0,5 | F3553C04.54.A07                                                                     |
|                                  |                                                                                   |                  |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100         | 45  | 50               | 115,3          | 50             | 5              | 0,5 | 0,5 | F3553C06.54.A07                                                                     |
|                                  | M20                                                                               | 16               |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63          | 45  | 50               | 108,8          | 32             | 5              | 0,5 | 0,5 | F3553C04.54.A08                                                                     |
|                                  |                                                                                   |                  |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100         | 45  | 50               | 115,3          | 50             | 5              | 0,5 | 0,5 | F3553C06.54.A08                                                                     |

## Zubehör

## Accessories

Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747

Dichtscheiben Typ DS/ER  
Sealing disks type DS/ER

» 750

Längeneinstellschrauben  
Length adjustment screws

» 744

Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743

Spannschlüsselsatz  
Set of clamping wrenches

» 758

Montagevorrichtung  
Assembly device

» 756

Drehmomentschlüssel  
Torque wrenches

» 759





# Softsynchro® Modular/MQL

**HSK-C 2)**  
**DIN 69893-1**



**MQL  
1**

$p_{max}$   
**10 bar**  
(140 psi)

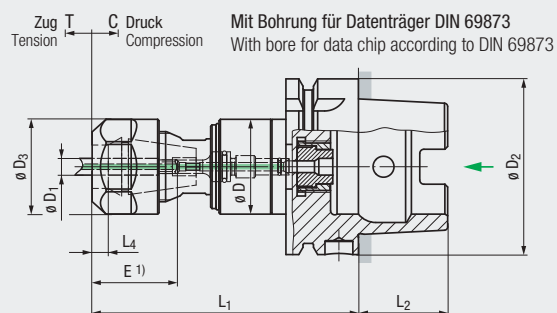
**Soft**



**L+ 2 mm**

**Einsatz auf Maschinen  
mit Synchronspindel**

For use on machines  
with synchronous spindle



| Typ<br>Type                               |  | $\emptyset D_1$ | Werkzeugkegel<br>Tool taper                                                                                                |  |  | $\emptyset D_2$ | $\emptyset D$ | $\emptyset D_3$ | $L_1$ | $L_2$ | $L_4$ | T   | C   |  |
|-------------------------------------------|-----------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------|---------------|-----------------|-------|-------|-------|-----|-----|-------------------------------------------------------------------------------------|
| <b>Softsynchro®<br/>1<br/>Modular/MQL</b> | M4,5 - M10                                                                        | 6 / 7           | Innenkegel<br>Internal taper<br>60°<br> | ER 20 (GB)                                                                        | Hi-Q/ERC<br>20                                                                    | HSK-A40         | 34            | 34              | 89,5  | 20    | 5     | 0,5 | 0,5 | <b>F3551C02.52.I01</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63         | 34            | 34              | 95,5  | 32    | 5     | 0,5 | 0,5 | <b>F3551C04.52.I01</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100        | 34            | 34              | 102   | 50    | 5     | 0,5 | 0,5 | <b>F3551C06.52.I01</b>                                                              |
|                                           | M8, M9,<br>M11, M12                                                               | 8 / 9           |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40         | 34            | 34              | 89,5  | 20    | 5     | 0,5 | 0,5 | <b>F3551C02.52.I02</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63         | 34            | 34              | 95,5  | 32    | 5     | 0,5 | 0,5 | <b>F3551C04.52.I02</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100        | 34            | 34              | 102   | 50    | 5     | 0,5 | 0,5 | <b>F3551C06.52.I02</b>                                                              |
|                                           | M10                                                                               | 10              |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40         | 34            | 34              | 89,5  | 20    | 5     | 0,5 | 0,5 | <b>F3551C02.52.I03</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63         | 34            | 34              | 95,5  | 32    | 5     | 0,5 | 0,5 | <b>F3551C04.52.I03</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100        | 34            | 34              | 102   | 50    | 5     | 0,5 | 0,5 | <b>F3551C06.52.I03</b>                                                              |
|                                           | M4,5 - M6<br>M8                                                                   | 6               | Außenkegel<br>External taper<br>90°<br> | ER 20 (GB)                                                                        | Hi-Q/ERC<br>20                                                                    | HSK-A40         | 34            | 34              | 89,5  | 20    | 5     | 0,5 | 0,5 | <b>F3551C02.52.A04</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63         | 34            | 34              | 95,5  | 32    | 5     | 0,5 | 0,5 | <b>F3551C04.52.A04</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100        | 34            | 34              | 102   | 50    | 5     | 0,5 | 0,5 | <b>F3551C06.52.A04</b>                                                              |
|                                           | M7, M10                                                                           | 7               |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40         | 34            | 34              | 89,5  | 20    | 5     | 0,5 | 0,5 | <b>F3551C02.52.A05</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63         | 34            | 34              | 95,5  | 32    | 5     | 0,5 | 0,5 | <b>F3551C04.52.A05</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100        | 34            | 34              | 102   | 50    | 5     | 0,5 | 0,5 | <b>F3551C06.52.A05</b>                                                              |
|                                           | M8                                                                                | 8               |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40         | 34            | 34              | 89,5  | 20    | 5     | 0,5 | 0,5 | <b>F3551C02.52.A06</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63         | 34            | 34              | 95,5  | 32    | 5     | 0,5 | 0,5 | <b>F3551C04.52.A06</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100        | 34            | 34              | 102   | 50    | 5     | 0,5 | 0,5 | <b>F3551C06.52.A06</b>                                                              |
|                                           | M12                                                                               | 9               |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40         | 34            | 34              | 89,5  | 20    | 5     | 0,5 | 0,5 | <b>F3551C02.52.A07</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63         | 34            | 34              | 95,5  | 32    | 5     | 0,5 | 0,5 | <b>F3551C04.52.A07</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100        | 34            | 34              | 102   | 50    | 5     | 0,5 | 0,5 | <b>F3551C06.52.A07</b>                                                              |
|                                           | M10                                                                               | 10              |                                                                                                                            |                                                                                   |                                                                                   | HSK-A40         | 34            | 34              | 89,5  | 20    | 5     | 0,5 | 0,5 | <b>F3551C02.52.A08</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63         | 34            | 34              | 95,5  | 32    | 5     | 0,5 | 0,5 | <b>F3551C04.52.A08</b>                                                              |
|                                           |                                                                                   |                 |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100        | 34            | 34              | 102   | 50    | 5     | 0,5 | 0,5 | <b>F3551C06.52.A08</b>                                                              |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

2) Außenkontur entspricht DIN 69893 A, Innenkontur nach DIN 69893 C  
Outside contour acc. DIN 69893 A, inside contour acc. DIN 69893 C

Füllstück und Längeneinstellschraube sind Bestandteile der Spannzangen-Aufnahme und für eine optimale MMS-Übergabe notwendig  
Filler piece and length adjustment screw are included in collet holder and required for optimum MQL transfer

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

MMS-Übergabe passend zu DIN 69090-4 und vielen Werknormen  
MQL supply according to DIN 69090-4 and many internal standards



## Softsynchro® Modular/MQL

HSK-C 2)  
DIN 69893-1



MQL  
1

$p_{\max}$   
10 bar  
(140 psi)

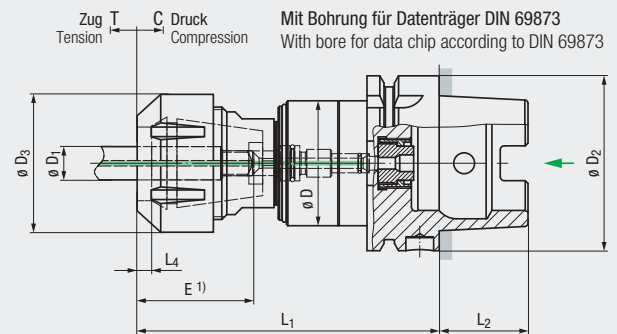
$T$   $C$   
Soft



L+ 2 mm

Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle



| Typ<br>Type                      |  | $\phi D_1$ | Werkzeugkegel<br>Tool taper                                                                                                |  |  | $\phi D_2$ | $\phi D$ | $\phi D_3$ | $L_1$ | $L_2$ | $L_4$ | $T$ | $C$ |  |
|----------------------------------|-----------------------------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------|----------|------------|-------|-------|-------|-----|-----|-------------------------------------------------------------------------------------|
| Softsynchro®<br>3<br>Modular/MQL | M12                                                                               | 9          | Innenkegel<br>Internal taper<br>60°<br> | ER 32 (GB)                                                                        | Hi-Q/ERC<br>32                                                                    | HSK-A63    | 45       | 50         | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.52.I01                                                                     |
|                                  |                                                                                   |            |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100   | 45       | 50         | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.52.I01                                                                     |
|                                  | M10 - M16                                                                         | 10 - 12    |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63    | 45       | 50         | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.52.I02                                                                     |
|                                  |                                                                                   |            |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100   | 45       | 50         | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.52.I02                                                                     |
|                                  | M18 - M20                                                                         | 14 - 16    |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63    | 45       | 50         | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.52.I03                                                                     |
|                                  |                                                                                   |            |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100   | 45       | 50         | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.52.I03                                                                     |
|                                  | M12                                                                               | 9          | Außenkegel<br>External taper<br>90°<br> | ER 32 (GB)                                                                        | Hi-Q/ERC<br>32                                                                    | HSK-A63    | 45       | 50         | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.52.A04                                                                     |
|                                  |                                                                                   |            |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100   | 45       | 50         | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.52.A04                                                                     |
|                                  | M10                                                                               | 10         |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63    | 45       | 50         | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.52.A05                                                                     |
|                                  |                                                                                   |            |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100   | 45       | 50         | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.52.A05                                                                     |
|                                  | M14 - M16                                                                         | 11 - 12    |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63    | 45       | 50         | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.52.A06                                                                     |
|                                  |                                                                                   |            |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100   | 45       | 50         | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.52.A06                                                                     |
|                                  | M18                                                                               | 14         |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63    | 45       | 50         | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.52.A07                                                                     |
|                                  |                                                                                   |            |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100   | 45       | 50         | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.52.A07                                                                     |
|                                  | M20                                                                               | 16         |                                                                                                                            |                                                                                   |                                                                                   | HSK-A63    | 45       | 50         | 108,8 | 32    | 5     | 0,5 | 0,5 | F3553C04.52.A08                                                                     |
|                                  |                                                                                   |            |                                                                                                                            |                                                                                   |                                                                                   | HSK-A100   | 45       | 50         | 115,3 | 50    | 5     | 0,5 | 0,5 | F3553C06.52.A08                                                                     |

### Zubehör Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER  
Sealing disks type DS/ER

» 750



Längeneinstellschrauben  
Length adjustment screws

» 744



Füllstück  
Adapter

» 743



Spannschlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



Drehmomentschlüssel  
Torque wrenches

» 759



# Softsynchro® Slim/MQL

## HSK-A

DIN 69893-1

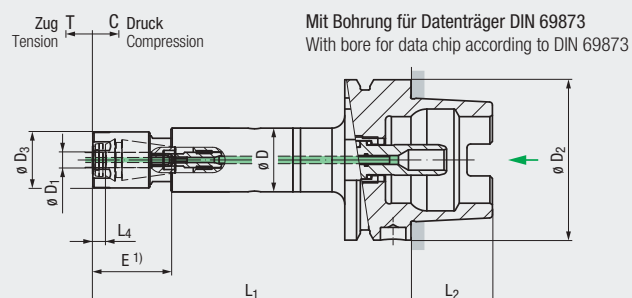

 MQL  
1

 $p_{max}$   
10 bar  
(140 psi)

 $\leftarrow \rightarrow$   
T C  
Soft


L+ 2 mm

 Einsatz auf Maschinen  
mit Synchronspindel

 For use on machines  
with synchronous spindle


| Typ<br>Type                   |  | Ø D <sub>1</sub> | Werkzeugkegel<br>Tool taper                                                                                                              |  |  | Ø D <sub>2</sub> | Ø D | Ø D <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>4</sub> | T   | C   | <div>new</div>  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|----------------|-----|-----|----------------------------------------------------------------------------------------------------|--|--|--|
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   |                  |     |                  |                |                |                |     |     |                                                                                                    |  |  |  |
| Softsynchro®<br>1<br>Slim/MQL | M4,5 - M10                                                                        | 6 / 7            | <div>Innenkegel<br/>Internal taper<br/>60°<br/></div> | ER 16 (GB)                                                                        | Hi-Q/ERMC<br>16                                                                   | HSK-A63          | 25  | 22               | 125            | 32             | 5              | 0,5 | 0,5 | F3671C04.XS.53.I01                                                                                 |  |  |  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 150            | 32             | 5              | 0,5 | 0,5 | F3671C04.S.53.I01                                                                                  |  |  |  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 175            | 32             | 5              | 0,5 | 0,5 | F3671C04.M.53.I01                                                                                  |  |  |  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 200            | 32             | 5              | 0,5 | 0,5 | F3671C04.L.53.I01                                                                                  |  |  |  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 125            | 50             | 5              | 0,5 | 0,5 | F3671C06.XS.53.I01                                                                                 |  |  |  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 150            | 50             | 5              | 0,5 | 0,5 | F3671C06.S.53.I01                                                                                  |  |  |  |
|                               | M8, M9,<br>M11, M12                                                               | 8 / 9            |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 175            | 50             | 5              | 0,5 | 0,5 | F3671C06.M.53.I01                                                                                  |  |  |  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 200            | 50             | 5              | 0,5 | 0,5 | F3671C06.L.53.I01                                                                                  |  |  |  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 125            | 32             | 5              | 0,5 | 0,5 | F3671C04.XS.53.I02                                                                                 |  |  |  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 150            | 32             | 5              | 0,5 | 0,5 | F3671C04.S.53.I02                                                                                  |  |  |  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 175            | 32             | 5              | 0,5 | 0,5 | F3671C04.M.53.I02                                                                                  |  |  |  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 200            | 32             | 5              | 0,5 | 0,5 | F3671C04.L.53.I02                                                                                  |  |  |  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 125            | 50             | 5              | 0,5 | 0,5 | F3671C06.XS.53.I02                                                                                 |  |  |  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 150            | 50             | 5              | 0,5 | 0,5 | F3671C06.S.53.I02                                                                                  |  |  |  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 175            | 50             | 5              | 0,5 | 0,5 | F3671C06.M.53.I02                                                                                  |  |  |  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 200            | 50             | 5              | 0,5 | 0,5 | F3671C06.L.53.I02                                                                                  |  |  |  |

### Zubehör Accessories


 Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747


 Dichtscheiben Typ DS/ER  
Sealing disks type DS/ER

» 750


 Längeneinstellschrauben  
Length adjustment screws

» 745


 Spannschlüsselsatz  
Set of clamping wrenches

» 758


 Montagevorrichtung  
Assembly device

» 756

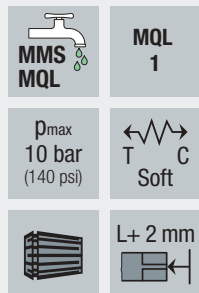
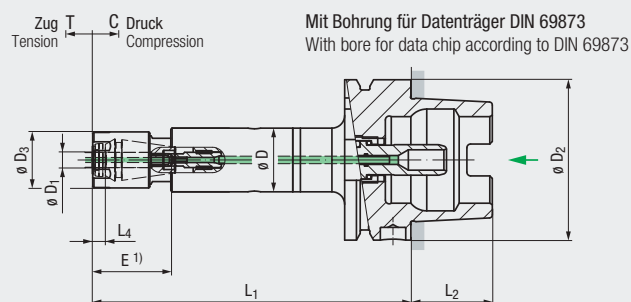

 Drehmomentschlüssel  
Torque wrenches

» 759

## Softsynchro® Slim/MQL

HSK-A

DIN 69893-1

Einsatz auf Maschinen  
mit SynchronspindelFor use on machines  
with synchronous spindle

| Typ<br>Type                   |  | ø D <sub>1</sub> | Werkzeugkegel<br>Tool taper                                                                                                              |  |  | ø D <sub>2</sub> | ø D | ø D <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>4</sub> | T   | C   | <div>new</div>  |
|-------------------------------|-----------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|----------------|-----|-----|----------------------------------------------------------------------------------------------------|
| Softsynchro®<br>1<br>Slim/MQL | M4,5 - M6<br>M8                                                                   | 6                | <div>Außenkegel<br/>External taper<br/>90°<br/></div> | ER 16 (GB)                                                                        | Hi-Q/ERMC<br>16                                                                   | HSK-A63          | 25  | 22               | 125            | 32             | 5              | 0,5 | 0,5 | F3671C04.XS.53.A03                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 150            | 32             | 5              | 0,5 | 0,5 | F3671C04.S.53.A03                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 175            | 32             | 5              | 0,5 | 0,5 | F3671C04.M.53.A03                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 200            | 32             | 5              | 0,5 | 0,5 | F3671C04.L.53.A03                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 125            | 50             | 5              | 0,5 | 0,5 | F3671C06.XS.53.A03                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 150            | 50             | 5              | 0,5 | 0,5 | F3671C06.S.53.A03                                                                                  |
|                               | M7, M10                                                                           | 7                |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 175            | 50             | 5              | 0,5 | 0,5 | F3671C06.M.53.A03                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 200            | 50             | 5              | 0,5 | 0,5 | F3671C06.L.53.A03                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 125            | 32             | 5              | 0,5 | 0,5 | F3671C04.XS.53.A04                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 150            | 32             | 5              | 0,5 | 0,5 | F3671C04.S.53.A04                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 175            | 32             | 5              | 0,5 | 0,5 | F3671C04.M.53.A04                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 200            | 32             | 5              | 0,5 | 0,5 | F3671C04.L.53.A04                                                                                  |
|                               | M8                                                                                | 8                |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 125            | 50             | 5              | 0,5 | 0,5 | F3671C06.XS.53.A04                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 150            | 50             | 5              | 0,5 | 0,5 | F3671C06.S.53.A04                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 175            | 50             | 5              | 0,5 | 0,5 | F3671C06.M.53.A04                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 200            | 50             | 5              | 0,5 | 0,5 | F3671C06.L.53.A04                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 125            | 32             | 5              | 0,5 | 0,5 | F3671C04.XS.53.A05                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 150            | 32             | 5              | 0,5 | 0,5 | F3671C04.S.53.A05                                                                                  |
|                               | M12                                                                               | 9                |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 175            | 32             | 5              | 0,5 | 0,5 | F3671C04.M.53.A05                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 200            | 32             | 5              | 0,5 | 0,5 | F3671C04.L.53.A05                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 125            | 50             | 5              | 0,5 | 0,5 | F3671C06.XS.53.A05                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 150            | 50             | 5              | 0,5 | 0,5 | F3671C06.S.53.A05                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 175            | 50             | 5              | 0,5 | 0,5 | F3671C06.M.53.A05                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 200            | 50             | 5              | 0,5 | 0,5 | F3671C06.L.53.A05                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 125            | 32             | 5              | 0,5 | 0,5 | F3671C04.XS.53.A06                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 150            | 32             | 5              | 0,5 | 0,5 | F3671C04.S.53.A06                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 175            | 32             | 5              | 0,5 | 0,5 | F3671C04.M.53.A06                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 200            | 32             | 5              | 0,5 | 0,5 | F3671C04.L.53.A06                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 125            | 50             | 5              | 0,5 | 0,5 | F3671C06.XS.53.A06                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 150            | 50             | 5              | 0,5 | 0,5 | F3671C06.S.53.A06                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 175            | 50             | 5              | 0,5 | 0,5 | F3671C06.M.53.A06                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 200            | 50             | 5              | 0,5 | 0,5 | F3671C06.L.53.A06                                                                                  |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Kühlschmierstoffrohr und Längeneinstellschraube sind Bestandteile der Spannzangen-Aufnahme und für eine optimale MMS-Übergabe notwendig  
Coolant-lubricant tube and length adjustment screw are included in collet holder and required for optimum MQL transfer

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

MMS-Übergabe passend zu DIN 69090-4 und vielen Werknormen  
MQL supply according to DIN 69090-4 and many internal standards



# Softsynchro® Slim/MQL

## HSK-A

DIN 69893-1


MQL  
2

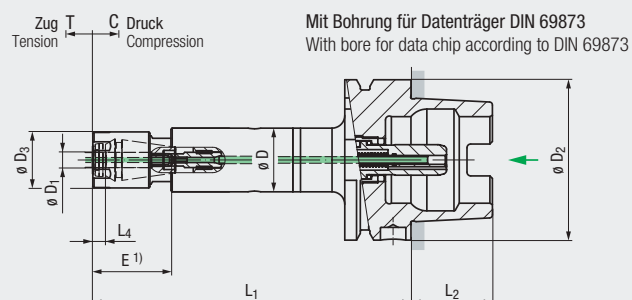
$p_{max}$   
10 bar  
(140 psi)

$T$   $C$   
Soft



L+ 2 mm

Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle


| Typ<br>Type                   |  | Ø D <sub>1</sub> | Werkzeugkegel<br>Tool taper                                                                                                              |  |  |                |                |                |     |     |     |                    |     |                    | <div>new</div>  |
|-------------------------------|-----------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------|----------------|----------------|-----|-----|-----|--------------------|-----|--------------------|----------------------------------------------------------------------------------------------------|
|                               | Ø D <sub>2</sub>                                                                  |                  |                                                                                                                                          | Ø D                                                                               | Ø D <sub>3</sub>                                                                  | L <sub>1</sub> | L <sub>2</sub> | L <sub>4</sub> | T   | C   |     |                    |     |                    |                                                                                                    |
| Softsynchro®<br>1<br>Slim/MQL | M4,5 - M10                                                                        | 6 / 7            | <div>Innenkegel<br/>Internal taper<br/>60°<br/></div> | ER 16 (GB)                                                                        | Hi-Q/ERMC<br>16                                                                   | HSK-A63        | 25             | 22             | 125 | 32  | 5   | 0,5                | 0,5 | F3671C04.XS.54.I01 |                                                                                                    |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63        | 25             | 22             | 150 | 32  | 5   | 0,5                | 0,5 | F3671C04.S.54.I01  |                                                                                                    |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63        | 25             | 22             | 175 | 32  | 5   | 0,5                | 0,5 | F3671C04.M.54.I01  |                                                                                                    |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63        | 25             | 22             | 200 | 32  | 5   | 0,5                | 0,5 | F3671C04.L.54.I01  |                                                                                                    |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100       | 25             | 22             | 125 | 50  | 5   | 0,5                | 0,5 | F3671C06.XS.54.I01 |                                                                                                    |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100       | 25             | 22             | 150 | 50  | 5   | 0,5                | 0,5 | F3671C06.S.54.I01  |                                                                                                    |
|                               | M8, M9,<br>M11, M12                                                               | 8 / 9            |                                                                                                                                          | HSK-A100                                                                          | 25                                                                                | 22             | 175            | 50             | 5   | 0,5 | 0,5 | F3671C06.M.54.I01  |     |                    |                                                                                                    |
|                               |                                                                                   |                  |                                                                                                                                          | HSK-A100                                                                          | 25                                                                                | 22             | 200            | 50             | 5   | 0,5 | 0,5 | F3671C06.L.54.I01  |     |                    |                                                                                                    |
|                               |                                                                                   |                  |                                                                                                                                          | HSK-A63                                                                           | 25                                                                                | 22             | 125            | 32             | 5   | 0,5 | 0,5 | F3671C04.XS.54.I02 |     |                    |                                                                                                    |
|                               |                                                                                   |                  |                                                                                                                                          | HSK-A63                                                                           | 25                                                                                | 22             | 150            | 32             | 5   | 0,5 | 0,5 | F3671C04.S.54.I02  |     |                    |                                                                                                    |
|                               |                                                                                   |                  |                                                                                                                                          | HSK-A63                                                                           | 25                                                                                | 22             | 175            | 32             | 5   | 0,5 | 0,5 | F3671C04.M.54.I02  |     |                    |                                                                                                    |
|                               |                                                                                   |                  |                                                                                                                                          | HSK-A63                                                                           | 25                                                                                | 22             | 200            | 32             | 5   | 0,5 | 0,5 | F3671C04.L.54.I02  |     |                    |                                                                                                    |
|                               |                                                                                   |                  |                                                                                                                                          | HSK-A100                                                                          | 25                                                                                | 22             | 125            | 50             | 5   | 0,5 | 0,5 | F3671C06.XS.54.I02 |     |                    |                                                                                                    |
|                               |                                                                                   |                  |                                                                                                                                          | HSK-A100                                                                          | 25                                                                                | 22             | 150            | 50             | 5   | 0,5 | 0,5 | F3671C06.S.54.I02  |     |                    |                                                                                                    |
|                               |                                                                                   |                  |                                                                                                                                          | HSK-A100                                                                          | 25                                                                                | 22             | 175            | 50             | 5   | 0,5 | 0,5 | F3671C06.M.54.I02  |     |                    |                                                                                                    |
|                               |                                                                                   |                  |                                                                                                                                          | HSK-A100                                                                          | 25                                                                                | 22             | 200            | 50             | 5   | 0,5 | 0,5 | F3671C06.L.54.I02  |     |                    |                                                                                                    |

### Zubehör

#### Accessories


Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747


Dichtscheiben Typ DS/ER  
Sealing disks type DS/ER

» 750


Längeneinstellschrauben  
Length adjustment screws

» 745


Spannschlüsselsatz  
Set of clamping wrenches

» 758


Montagevorrichtung  
Assembly device

» 756

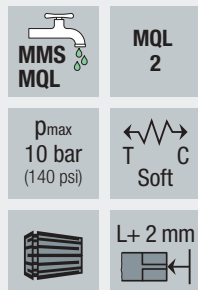
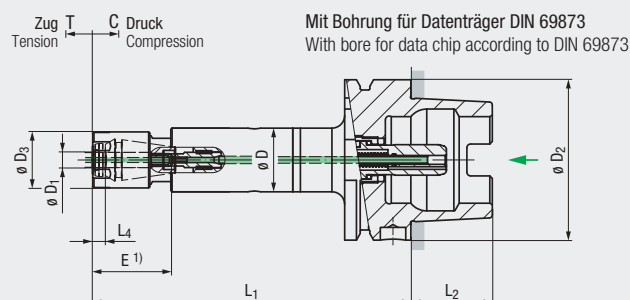

Drehmomentschlüssel  
Torque wrenches

» 759

## Softsynchro® Slim/MQL

HSK-A

DIN 69893-1

Einsatz auf Maschinen  
mit SynchronspindelFor use on machines  
with synchronous spindle

| Typ<br>Type                   |  | ø D <sub>1</sub> | Werkzeugkegel<br>Tool taper                                                                                                              |  |  | ø D <sub>2</sub> | ø D | ø D <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>4</sub> | T   | C   | <div>new</div>  |
|-------------------------------|-----------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|----------------|-----|-----|----------------------------------------------------------------------------------------------------|
| Softsynchro®<br>1<br>Slim/MQL | M4,5 - M6<br>M8                                                                   | 6                | <div>Außenkegel<br/>External taper<br/>90°<br/></div> | ER 16 (GB)                                                                        | Hi-Q/ERMC<br>16                                                                   | HSK-A63          | 25  | 22               | 125            | 32             | 5              | 0,5 | 0,5 | F3671C04.XS.54.A03                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 150            | 32             | 5              | 0,5 | 0,5 | F3671C04.S.54.A03                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 175            | 32             | 5              | 0,5 | 0,5 | F3671C04.M.54.A03                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 200            | 32             | 5              | 0,5 | 0,5 | F3671C04.L.54.A03                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 125            | 50             | 5              | 0,5 | 0,5 | F3671C06.XS.54.A03                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 150            | 50             | 5              | 0,5 | 0,5 | F3671C06.S.54.A03                                                                                  |
|                               | M7, M10                                                                           | 7                |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 175            | 50             | 5              | 0,5 | 0,5 | F3671C06.M.54.A03                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 200            | 50             | 5              | 0,5 | 0,5 | F3671C06.L.54.A03                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 125            | 32             | 5              | 0,5 | 0,5 | F3671C04.XS.54.A04                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 150            | 32             | 5              | 0,5 | 0,5 | F3671C04.S.54.A04                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 175            | 32             | 5              | 0,5 | 0,5 | F3671C04.M.54.A04                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 200            | 32             | 5              | 0,5 | 0,5 | F3671C04.L.54.A04                                                                                  |
|                               | M8                                                                                | 8                |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 125            | 50             | 5              | 0,5 | 0,5 | F3671C06.XS.54.A04                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 150            | 50             | 5              | 0,5 | 0,5 | F3671C06.S.54.A04                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 175            | 50             | 5              | 0,5 | 0,5 | F3671C06.M.54.A04                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 200            | 50             | 5              | 0,5 | 0,5 | F3671C06.L.54.A04                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 125            | 32             | 5              | 0,5 | 0,5 | F3671C04.XS.54.A05                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 150            | 32             | 5              | 0,5 | 0,5 | F3671C04.S.54.A05                                                                                  |
|                               | M12                                                                               | 9                |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 175            | 32             | 5              | 0,5 | 0,5 | F3671C04.M.54.A05                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 200            | 32             | 5              | 0,5 | 0,5 | F3671C04.L.54.A05                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 125            | 50             | 5              | 0,5 | 0,5 | F3671C06.XS.54.A05                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 150            | 50             | 5              | 0,5 | 0,5 | F3671C06.S.54.A05                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 175            | 50             | 5              | 0,5 | 0,5 | F3671C06.M.54.A05                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 200            | 50             | 5              | 0,5 | 0,5 | F3671C06.L.54.A05                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 125            | 32             | 5              | 0,5 | 0,5 | F3671C04.XS.54.A06                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 150            | 32             | 5              | 0,5 | 0,5 | F3671C04.S.54.A06                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 175            | 32             | 5              | 0,5 | 0,5 | F3671C04.M.54.A06                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A63          | 25  | 22               | 200            | 32             | 5              | 0,5 | 0,5 | F3671C04.L.54.A06                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 125            | 50             | 5              | 0,5 | 0,5 | F3671C06.XS.54.A06                                                                                 |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 150            | 50             | 5              | 0,5 | 0,5 | F3671C06.S.54.A06                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 175            | 50             | 5              | 0,5 | 0,5 | F3671C06.M.54.A06                                                                                  |
|                               |                                                                                   |                  |                                                                                                                                          |                                                                                   |                                                                                   | HSK-A100         | 25  | 22               | 200            | 50             | 5              | 0,5 | 0,5 | F3671C06.L.54.A06                                                                                  |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Kühlschmierstoffrohr und Längeneinstellschraube sind Bestandteile der Spannzangen-Aufnahme und für eine optimale MMS-Übergabe notwendig  
Coolant-lubricant tube and length adjustment screw are included in collet holder and required for optimum MQL transfer

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

MMS-Übergabe passend zu DIN 69090-4 und vielen Werknormen  
MQL supply according to DIN 69090-4 and many internal standards





# Softsynchro® Xtension/MQL

## HSK-A

DIN 69893-1



MQL  
1

$p_{max}$   
6 bar  
(85 psi)

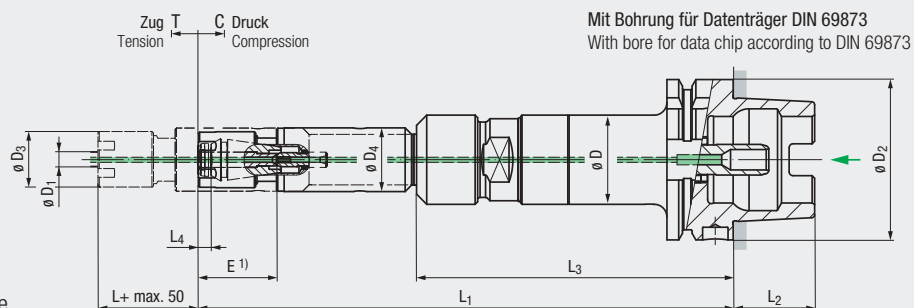


L+ 2 mm



Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle



| Typ<br>Type                       |  | Ø D <sub>1</sub> | Werkzeugkegel<br>Tool taper                                                                                                |  |  | Ø D <sub>2</sub> | Ø D | Ø D <sub>3</sub> | Ø D <sub>4</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>3</sub> | L <sub>4</sub> | T   | C   | <div>new</div>  |                 |                 |
|-----------------------------------|-----------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|------------------|----------------|----------------|----------------|----------------|-----|-----|----------------------------------------------------------------------------------------------------|-----------------|-----------------|
| Softsynchro®<br>1<br>Xtension/MQL | M4,5 - M10                                                                        | 6 / 7            | Innenkegel<br>Internal taper<br>60°<br> | ER 16 (GB)                                                                        | Hi-Q/ERMC<br>16                                                                   | HSK-A63          | 35  | 22               | 25               | 210            | 32             | 124,3          | 5              | 0,5 | 0,5 | F3811C04.53.I01                                                                                    |                 |                 |
|                                   |                                                                                   |                  |                                                                                                                            |                                                                                   |                                                                                   |                  |     |                  |                  |                |                |                |                |     |     | F3811C06.53.I01                                                                                    |                 |                 |
|                                   | M8, M9,<br>M11, M12                                                               | 8 / 9            |                                                                                                                            |                                                                                   |                                                                                   |                  |     |                  |                  |                |                |                |                |     |     |                                                                                                    | F3811C04.53.I02 |                 |
|                                   |                                                                                   |                  |                                                                                                                            |                                                                                   |                                                                                   |                  |     |                  |                  |                |                |                |                |     |     | F3811C06.53.I02                                                                                    |                 |                 |
|                                   | M4,5 - M6<br>M8                                                                   | 6                | Außenkegel<br>External taper<br>90°<br> | ER 16 (GB)                                                                        | Hi-Q/ERMC<br>16                                                                   | HSK-A63          | 35  | 22               | 25               | 210            | 32             | 124,3          | 5              | 0,5 | 0,5 | F3811C04.53.A03                                                                                    |                 |                 |
|                                   |                                                                                   |                  |                                                                                                                            |                                                                                   |                                                                                   |                  |     |                  |                  |                |                |                |                |     |     |                                                                                                    | F3811C06.53.A03 |                 |
|                                   | M7, M10                                                                           | 7                |                                                                                                                            |                                                                                   |                                                                                   |                  |     |                  |                  |                |                |                |                |     |     |                                                                                                    | F3811C04.53.A04 |                 |
|                                   |                                                                                   |                  |                                                                                                                            |                                                                                   |                                                                                   |                  |     |                  |                  |                |                |                |                |     |     |                                                                                                    | F3811C06.53.A04 |                 |
|                                   | M8                                                                                | 8                |                                                                                                                            |                                                                                   |                                                                                   |                  |     |                  |                  |                |                |                |                |     |     |                                                                                                    | F3811C04.53.A05 |                 |
|                                   |                                                                                   |                  |                                                                                                                            |                                                                                   |                                                                                   |                  |     |                  |                  |                |                |                |                |     |     |                                                                                                    | F3811C06.53.A05 |                 |
|                                   | M12                                                                               | 9                |                                                                                                                            |                                                                                   |                                                                                   |                  |     |                  |                  |                |                |                |                |     |     |                                                                                                    |                 | F3811C04.53.A06 |
|                                   |                                                                                   |                  |                                                                                                                            |                                                                                   |                                                                                   |                  |     |                  |                  |                |                |                |                |     |     |                                                                                                    |                 | F3811C06.53.A06 |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Kühlschmierstoffrohr und Längeneinstellschraube sind Bestandteile der Spannzangen-Aufnahme und für eine optimale MMS-Übergabe notwendig  
Coolant-lubricant tube and length adjustment screw are included in collet holder and required for optimum MQL transfer

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

MMS-Übergabe passend zu DIN 69090-4 und vielen Werknormen  
MQL supply according to DIN 69090-4 and many internal standards

### Zubehör

#### Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER  
Sealing disks type DS/ER

» 750



Längeneinstellschrauben  
Length adjustment screws

» 745



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



Spannschlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



Drehmomentschlüssel  
Torque wrenches

» 759

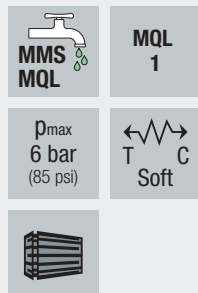


Drehmomentschlüssel  
mit Rollenschlüsselaufsatz  
Torque roller wrench  
F0900006



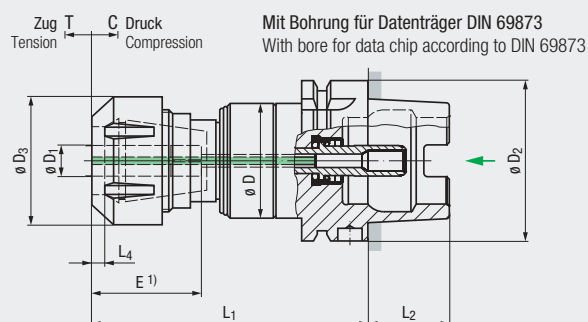
## Softsynchro®/MMS

**HSK-A**  
DIN 69893-1



**Einsatz auf Maschinen  
mit Synchronspindel**

For use on machines  
with synchronous spindle



| Typ<br>Type                   |            | $\varnothing D_1$ |            |                | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $L_1$ | $L_2$ | $L_4$ | T   | C   |                      |
|-------------------------------|------------|-------------------|------------|----------------|-------------------|-----------------|-------------------|-------|-------|-------|-----|-----|----------------------|
| <b>Softsynchro®<br/>1/MMS</b> | M4,5 - M10 | 6 - 8             | ER 20 (GB) | Hi-Q/ERC<br>20 | HSK-A50           | 34              | 34                | 93,5  | 25    | 5     | 0,5 | 0,5 | <b>F3491C03.1.68</b> |
|                               |            |                   |            |                | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | <b>F3491C04.1.68</b> |
|                               |            |                   |            |                | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | <b>F3491C06.1.68</b> |
|                               | M10 - M12  | 9 - 10            |            |                | HSK-A50           | 34              | 34                | 93,5  | 25    | 5     | 0,5 | 0,5 | <b>F3491C03.1</b>    |
|                               |            |                   |            |                | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | <b>F3491C04.1</b>    |
| <b>Softsynchro®<br/>3/MMS</b> |            |                   | ER 32 (GB) | Hi-Q/ERC<br>32 | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | <b>F3491C06.1</b>    |
|                               | M10 - M20  | 9 - 16            |            |                | HSK-A50           | 45              | 50                | 116,3 | 25    | 5     | 0,5 | 0,5 | <b>F3493C03.1</b>    |
|                               |            |                   |            |                | HSK-A63           | 45              | 50                | 108,8 | 32    | 5     | 0,5 | 0,5 | <b>F3493C04.1</b>    |
|                               |            |                   |            |                | HSK-A100          | 45              | 50                | 115,3 | 50    | 5     | 0,5 | 0,5 | <b>F3493C06.1</b>    |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Kühlschmierstoffrohr ist im Schaft enthalten und darf nicht demontiert werden, da sonst die Funktion der MMS-Übergabe nicht mehr gewährleistet ist!  
Coolant tube is integrated into the shank and must not be disassembled, otherwise the function of the MMS transfer is no longer warranted!

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

MMS-Übergabe passend zu DIN 69090-4 und vielen Werknormen  
MQL supply according to DIN 69090-4 and many internal standards

## Zubehör Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER  
Sealing disks type DS/ER

» 750



Spann Schlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



Drehmomentschlüssel  
Torque wrenches

» 759



# Softsynchro®/MMS

## HSK-A

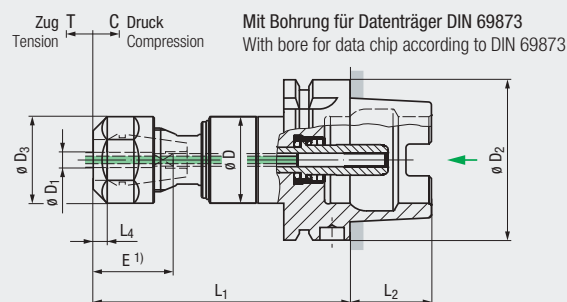
DIN 69893-1


**MQL  
2**

$p_{max}$   
6 bar  
(85 psi)

$\leftarrow T$   $\rightarrow C$   
Soft


**Einsatz auf Maschinen  
mit Synchronspindel**

 For use on machines  
with synchronous spindle


| Typ<br>Type                   |            | $\varnothing D_1$ |            |                | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $L_1$ | $L_2$ | $L_4$ | T   | C   |                   |
|-------------------------------|------------|-------------------|------------|----------------|-------------------|-----------------|-------------------|-------|-------|-------|-----|-----|-------------------|
| <b>Softsynchro®<br/>1/MMS</b> | M4,5 - M12 | 6 - 10            | ER 20 (GB) | Hi-Q/ERC<br>20 | HSK-A50           | 34              | 34                | 93,5  | 25    | 5     | 0,5 | 0,5 | <b>F3511C03.1</b> |
|                               |            |                   |            |                | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | <b>F3511C04.1</b> |
|                               |            |                   |            |                | HSK-A100          | 34              | 34                | 102   | 50    | 5     | 0,5 | 0,5 | <b>F3511C06.1</b> |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

Kühlschmierstoffrohr ist im Schaft enthalten und darf nicht demontiert werden, da sonst die Funktion der MMS-Übergabe nicht mehr gewährleistet ist!  
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Clamping nut for sealing disks is included in the delivery

MMS-Übergabe passend zu DIN 69090-4 und vielen Werknormen  
MQL supply according to DIN 69090-4 and many internal standards

### Zubehör

#### Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER  
Sealing disks type DS/ER

» 750



Spannschlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



Drehmomentschlüssel  
Torque wrenches

» 759

## Softsynchro®/MMS

HSK-C 2)  
DIN 69893-1



MQL  
1

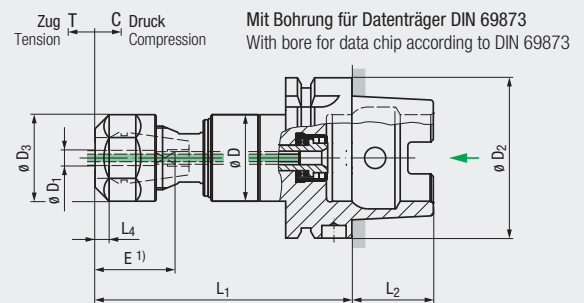
$p_{\max}$   
6 bar  
(85 psi)

T C  
Soft



Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle



| Typ<br>Type           |  | $\varnothing D_1$ |  |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | $L_1$ | $L_2$ | $L_4$ | T   | C   |  |
|-----------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------|-------------------|-------|-------|-------|-----|-----|-------------------------------------------------------------------------------------|
| Softsynchro®<br>1/MMS | M4,5 - M10                                                                        | 6 - 8             | ER 20 (GB)                                                                        | Hi-Q/ERC<br>20                                                                    | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3491C04.1.5268                                                                     |
|                       | M10 - M12                                                                         | 9 - 10            |                                                                                   |                                                                                   | HSK-A63           | 34              | 34                | 95,5  | 32    | 5     | 0,5 | 0,5 | F3491C04.1.52                                                                       |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Weitere Ausführungen auf Anfrage  
Further designs upon request

2) Außenkontur entspricht DIN 69893 A, Innenkontur nach DIN 69893 C  
Outside contour acc. DIN 69893 A, inside contour acc. DIN 69893 C

Kühlschmierstoffrohr ist im Schaft enthalten und darf nicht demontiert werden, da sonst die Funktion der MMS-Übergabe nicht mehr gewährleistet ist!  
Coolant tube is integrated into the shank and must not be disassembled, otherwise the function of the MQL transfer is no longer warranted!

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

MMS-Übergabe passend zu DIN 69090-4 und vielen Werknormen  
MQL supply according to DIN 69090-4 and many internal standards

## Zubehör Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER  
Sealing disks type DS/ER

» 750



Spannschlüsselsatz  
Set of clamping wrenches

» 758



Montagevorrichtung  
Assembly device

» 756



Drehmomentschlüssel  
Torque wrenches

» 759





## Speedsynchro® Modular NFC/MQL

ABS®

(System KOMET)



$p_{max}$   
10 bar  
(140 psi)



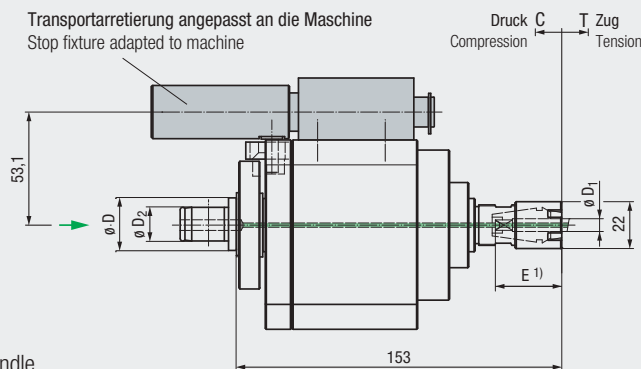
$\leftarrow \rightarrow$   
C T  
Soft



Einsatz auf Maschinen  
mit Synchronspindel

For use on machines  
with synchronous spindle

Transportarretierung angepasst an die Maschine  
Stop fixture adapted to machine



| Type<br>Type                             |  |  |  | $\varnothing D$ | $\varnothing D_2$ | $\varnothing D_1$ | Max. Spindeldrehzahl<br>[min <sup>-1</sup> ]<br>Max. spindle speed<br>[rpm] | Übersetzungs-<br>verhältnis<br>Transmission<br>ratio | C   | T   |  |
|------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|-------------------|-------------------|-----------------------------------------------------------------------------|------------------------------------------------------|-----|-----|---------------------------------------------------------------------------------------|
| <b>Speedsynchro®<br/>Modular NFC/MQL</b> | M4,5 - M8                                                                           | ER 16 (GB)                                                                          | HI-Q/ERMC<br>16                                                                     | ABS 32          | 16                | 4 - 8             | 2000                                                                        | 1 : 4,412                                            | 0,5 | 0,5 | <b>F3771L01</b>                                                                       |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

Die Spannzangen-Aufnahme Speedsynchro® Modular NFC/MQL kann nur mit Adaptionsschäfte, MMS-Kühlschmierstoffrohr, Transportarretierung und Längeneinstellschraube eingesetzt werden.

Die Anpassung der Transportarretierung an die maschinenseitigen Vorgaben erfolgt durch EMUGE. Bitte wenden Sie sich hierfür an den für Sie zuständigen Vertriebspartner.

The collet holder Speedsynchro® Modular NFC/MQL can only be used with adapter shank, MQL coolant tube, stop fixture and length adjustment screw.

The adaptation of the stop fixture to the specifications of the machine is carried out by EMUGE. Please contact your responsible distribution partner for more information.

## Zubehör

## Accessories



Adaptionsschäfte  
Adapter shanks

» 741



Montagevorrichtung  
Assembly device

» 757



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Längeneinstellschrauben  
Length adjustment screws

» 745



Dichtscheiben Typ DS/ER  
Sealing disks type DS/ER

» 750



Kühlschmierstoffrohre und Schlüssel  
Coolant tubes and wrenches

» 742 - 743



Drehmomentschlüssel  
Torque wrenches

» 759





Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFM

SWITCH-MASTER

HF

EM

Zubehör  
Accessories

# KSN/MQL

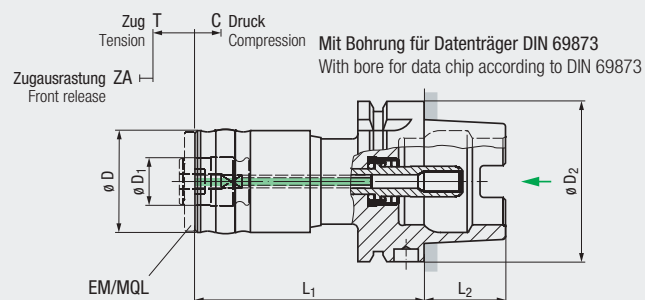
## HSK-A

DIN 69893-1



MQL  
1

$p_{max}$   
6 bar  
(85 psi)



Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen

For use on CNC machining centres  
and other machine tools

| Typ<br>Type |                              |           | ø D <sub>2</sub> | ø D | ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | T | C | ZA  |                   |
|-------------|------------------------------|-----------|------------------|-----|------------------|----------------|----------------|---|---|-----|-------------------|
| KSN 1/MQL   | M6 - M12<br>(Nr. 10 - 1 1/2) | EM 01/MQL | HSK-A40          | 40  | 19               | 88             | 20             | 5 | 5 | 2,5 | <b>F3471C02.1</b> |
|             |                              |           | HSK-A50          | 40  | 19               | 90             | 25             | 5 | 5 | 2,5 | F3471C03.1        |
|             |                              |           | HSK-A63          | 40  | 19               | 90             | 32             | 5 | 5 | 2,5 | <b>F3471C04.1</b> |
|             |                              |           | HSK-A80          | 40  | 19               | 93             | 40             | 5 | 5 | 2,5 | F3471C05.1        |
|             |                              |           | HSK-A100         | 40  | 19               | 93             | 50             | 5 | 5 | 2,5 | <b>F3471C06.1</b> |
| KSN 3/MQL   | M10 - M24<br>(9/16 - 1")     | EM 03/MQL | HSK-A63          | 56  | 31               | 120            | 32             | 7 | 7 | 3   | <b>F3473C04.1</b> |
|             |                              |           | HSK-A80          | 56  | 31               | 125            | 40             | 7 | 7 | 3   | <b>F3473C05.1</b> |
|             |                              |           | HSK-A100         | 56  | 31               | 128            | 50             | 7 | 7 | 3   | F3473C06.1        |

Ausführung für 2-Kanal-MMS-System auf Anfrage  
Design with 2-channel MQL system upon request

Weitere Ausführungen auf Anfrage  
Further designs upon request

Kühlschmierstoffrohr ist im Schaft enthalten und darf nicht demontiert werden, da sonst die Funktion der MMS-Übergabe nicht mehr gewährleistet ist!  
Coolant tube is integrated into the shank and must not be disassembled, otherwise the function of the MQL transfer is no longer warranted!

MMS-Übergabe passend zu DIN 69090-4 und vielen Werknormen  
MQL supply according to DIN 69090-4 and many internal standards

## Zubehör Accessories



Schnellwechsel-Einsätze Typ EM/MQL  
Quick-change adapters type EM/MQL

» 696



Schnellwechsel-Einsätze Typ EM-Z/MQL  
Quick-change adapters type EM-Z/MQL

» 697 - 698



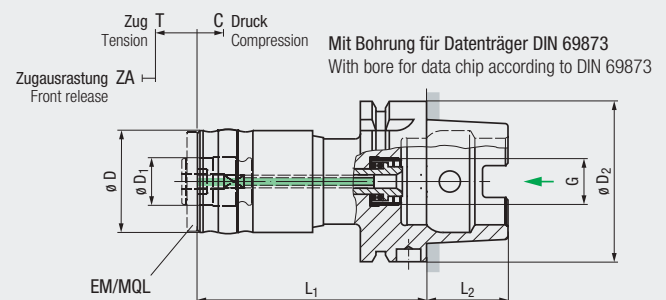
## KSN/MQL

HSK-C <sup>2)</sup>  
DIN 69893-1



MQL  
1

$p_{\max}$   
6 bar  
(85 psi)



Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen

For use on CNC machining centres  
and other machine tools

| Typ<br>Type |                           |           | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | $L_1$ | $L_2$ | T | C | ZA  |               |
|-------------|---------------------------|-----------|-------------------|-----------------|-------------------|-------|-------|---|---|-----|---------------|
| KSN 1/MQL   | M6 - M12<br>(Nr.10 - 1/2) | EM 01/MQL | HSK-A40           | 40              | 19                | 88    | 20    | 5 | 5 | 2,5 | F3471C02.1.52 |
|             |                           |           | HSK-A50           | 40              | 19                | 90    | 25    | 5 | 5 | 2,5 | F3471C03.1.52 |
|             |                           |           | HSK-A63           | 40              | 19                | 90    | 32    | 5 | 5 | 2,5 | F3471C04.1.52 |
| KSN 3/MQL   | M10 - M24<br>(9/16 - 1")  | EM 03/MQL | HSK-A63           | 56              | 31                | 120   | 32    | 7 | 7 | 3   | F3473C04.1.52 |
|             |                           |           | HSK-A80           | 56              | 31                | 125   | 40    | 7 | 7 | 3   | F3473C05.1.52 |
|             |                           |           | HSK-A100          | 56              | 31                | 128   | 50    | 7 | 7 | 3   | F3473C06.1.52 |

<sup>2)</sup> Außenkontur entspricht DIN 69893 A, Innenkontur nach DIN 69893 C  
Outside contour acc. DIN 69893 A, inside contour acc. DIN 69893 C

Weitere Ausführungen auf Anfrage  
Further designs upon request

Kühlschmierstoffrohr ist im Schaft enthalten und darf nicht demontiert werden, da sonst die Funktion der MMS-Übergabe nicht mehr gewährleistet ist!  
Coolant tube is integrated into the shank and must not be disassembled, otherwise the function of the MQL transfer is no longer warranted!

MMS-Übergabe passend zu DIN 69090-4 und vielen Werknormen  
MQL supply according to DIN 69090-4 and many internal standards

## Zubehör

Accessories



Schnellwechsel-Einsätze Typ EM/MQL  
Quick-change adapters type EM/MQL

► 696



Schnellwechsel-Einsätze Typ EM-Z/MQL  
Quick-change adapters type EM-Z/MQL

► 697 - 698





Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

ML  
MMS

SFM

SWITCH-  
MASTER

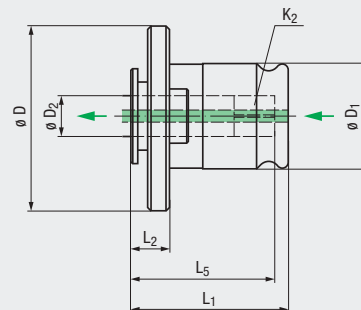
HF

EM

Zubehör  
Accessories

# EM/MQL

## DIN



$p_{max}$   
6 bar  
(85 psi)



Typ · Type

EM 01/MQL

EM 03/MQL



M6 - M12

M10 - M24

Ø D

39

55

Ø D<sub>1</sub>

19

31

L<sub>1</sub>

29

45

L<sub>2</sub>

7,5

10

## DIN

| Ø D <sub>2</sub> | K <sub>2</sub> |     |           |                   | L <sub>5</sub> |  | L <sub>5</sub>    |    |  |  |  |  |  |
|------------------|----------------|-----|-----------|-------------------|----------------|--|-------------------|----|--|--|--|--|--|
| 6                | 4,9            | M6  | M8        | <b>F4491106.6</b> | 25             |  |                   |    |  |  |  |  |  |
| 7                | 5,5            | M7  | M9 - M10  | <b>F4491107.6</b> | 25             |  |                   |    |  |  |  |  |  |
| 8                | 6,2            | M8  | M11       | <b>F4491108.6</b> | 26             |  |                   |    |  |  |  |  |  |
| 9                | 7              | M9  | M12       | <b>F4491109.6</b> | 27             |  |                   |    |  |  |  |  |  |
| 10               | 8              | M10 |           | <b>F4491110.6</b> | 27             |  | <b>F4493110.6</b> | 40 |  |  |  |  |  |
| 11               | 9              |     | M14       |                   |                |  | <b>F4493111.6</b> | 41 |  |  |  |  |  |
| 12               | 9              |     | M16       |                   |                |  | <b>F4493112.6</b> | 41 |  |  |  |  |  |
| 14               | 11             |     | M18       |                   |                |  | <b>F4493113.6</b> | 43 |  |  |  |  |  |
| 16               | 12             |     | M20       |                   |                |  | <b>F4493114.6</b> | 44 |  |  |  |  |  |
| 18               | 14,5           |     | M22 - M24 |                   |                |  | <b>F4493115.6</b> | 44 |  |  |  |  |  |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

Großer Griffing – in Kombination mit Schnellwechsel-Aufnahmen der Typenreihe KSN/MQL – ermöglicht stirnseitige Abdichtung  
Large ring handle – combined with quick-change tap holders KSN/MQL – enables face sealing



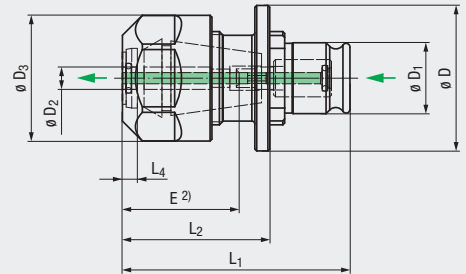
## EM-Z/MQL



$p_{\max}$   
6 bar  
(85 psi)



L+ 2 mm



| Typ<br>Type |  | $\varnothing D_1$ | Werkzeugkegel<br>Tool taper                                                                                                |  |  | $\varnothing D$ | $\varnothing D_1$ | $\varnothing D_3$ | $L_1$ | $L_2$ |  |
|-------------|-----------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------|-------------------|-------------------|-------|-------|-------------------------------------------------------------------------------------|
| EM 01-Z/MQL | M4,5 - M10                                                                        | 6 / 7             | Innenkegel<br>Internal taper<br>60°<br>  | ER 20 (GB)                                                                        | Hi-Q/ERC 20                                                                       | 39              | 19                | 34                | 61    | 39,5  | F4501001.13D6                                                                       |
|             | M8, M9, M11, M12                                                                  | 8 / 9             |                                                                                                                            |                                                                                   |                                                                                   | 39              | 19                | 34                | 61    | 39,5  | F4501001.13D8                                                                       |
|             | M10                                                                               | 10                |                                                                                                                            |                                                                                   |                                                                                   | 39              | 19                | 34                | 61    | 39,5  | F4501001.13D10                                                                      |
|             | M4,5 - M6 M8                                                                      | 6                 | Außenkegel<br>External taper<br>90°<br> | ER 20 (GB)                                                                        | Hi-Q/ERC 20                                                                       | 39              | 19                | 34                | 61    | 39,5  | F4501001.23D6                                                                       |
|             | M7, M10                                                                           | 7                 |                                                                                                                            |                                                                                   |                                                                                   | 39              | 19                | 34                | 61    | 39,5  | F4501001.23D7                                                                       |
|             | M8                                                                                | 8                 |                                                                                                                            |                                                                                   |                                                                                   | 39              | 19                | 34                | 61    | 39,5  | F4501001.23D8                                                                       |
|             | M12                                                                               | 9                 |                                                                                                                            |                                                                                   |                                                                                   | 39              | 19                | 34                | 61    | 39,5  | F4501001.23D9                                                                       |
|             | M10                                                                               | 10                |                                                                                                                            |                                                                                   |                                                                                   | 39              | 19                | 34                | 61    | 39,5  | F4501001.23D10                                                                      |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

2) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Großer Grifftring – in Kombination mit Schnellwechsel-Aufnahmen der Typenreihe KSN/MQL – ermöglicht stirnseitige Abdichtung  
Large ring handle – combined with quick-change tap holders KSN/MQL – enables face sealing

Längeneinstellschraube ist Bestandteil des Schnellwechsel-Einsatzes und für eine optimale MMS-Übergabe notwendig  
Length adjustment screw is included in quick-change adapter and required for optimum MQL transfer

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

## Zubehör

### Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Spannschlüssel  
Clamping wrench

» 758



Dichtscheiben Typ DS/ER  
Sealing disks type DS/ER

» 750

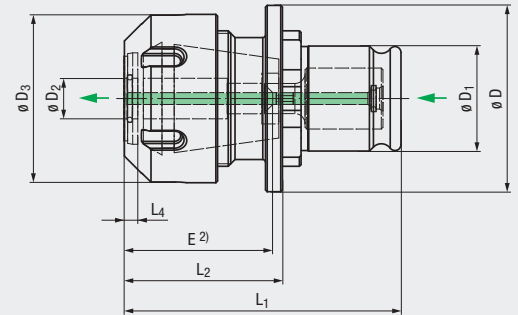


Aufnahmekopf AEU  
Adapter head AEU

» 760



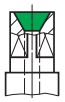
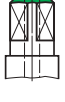
# EM-Z/MQL



$p_{max}$   
6 bar  
(85 psi)



L+ 2 mm

| Typ<br>Type |  | $\varnothing D_1$ | Werkzeugkegel<br>Tool taper                                                                                                |  |  | $\varnothing D$ | $\varnothing D_1$ | $\varnothing D_3$ | $L_1$ | $L_2$ |  |
|-------------|-----------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------|-------------------|-------------------|-------|-------|-------------------------------------------------------------------------------------|
| EM 03-Z/MQL | M10 - M16                                                                         | 10 - 12           | Innenkegel<br>Internal taper<br>60°<br>  | ER 32 (GB)                                                                        | Hi-Q/ERC 32                                                                       | 55              | 31                | 50                | 81,5  | 46,5  | F4503001.13D10                                                                      |
|             | M18 - M20                                                                         | 14 - 16           |                                                                                                                            |                                                                                   |                                                                                   | 55              | 31                | 50                | 81,5  | 46,5  | F4503001.13D14                                                                      |
|             | M10                                                                               | 10                | Außenkegel<br>External taper<br>90°<br> | ER 32 (GB)                                                                        | Hi-Q/ERC 32                                                                       | 55              | 31                | 50                | 81,5  | 46,5  | F4503001.23D10                                                                      |
|             | M14 - M16                                                                         | 11 - 12           |                                                                                                                            |                                                                                   |                                                                                   | 55              | 31                | 50                | 81,5  | 46,5  | F4503001.23D12                                                                      |
|             | M18                                                                               | 14                |                                                                                                                            |                                                                                   |                                                                                   | 55              | 31                | 50                | 81,5  | 46,5  | F4503001.23D14                                                                      |
|             | M20                                                                               | 16                |                                                                                                                            |                                                                                   |                                                                                   | 55              | 31                | 50                | 81,5  | 46,5  | F4503001.23D16                                                                      |
|             |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   |                 |                   |                   |       |       |                                                                                     |
|             |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   |                 |                   |                   |       |       |                                                                                     |
|             |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   |                 |                   |                   |       |       |                                                                                     |
|             |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   |                 |                   |                   |       |       |                                                                                     |
|             |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   |                 |                   |                   |       |       |                                                                                     |
|             |                                                                                   |                   |                                                                                                                            |                                                                                   |                                                                                   |                 |                   |                   |       |       |                                                                                     |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

2) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Großer Griffing – in Kombination mit Schnellwechsel-Aufnahmen der Typenreihe KSN/MQL – ermöglicht stirnseitige Abdichtung  
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Length adjustment screw is included in quick-change adapter and required for optimum MQL transfer

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

## Zubehör Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB) ▶▶ 746 - 747



Dichtscheiben Typ DS/ER  
Sealing disks type DS/ER ▶▶ 750



Spannschlüssel  
Clamping wrench ▶▶ 758



Aufnahmekopf AEU  
Adapter head AEU ▶▶ 760



## Typenreihe SFM

### SFM Series

#### Einsatz auf Mehrspindelmaschinen und Transferstraßen

Auf Grund ihrer schlanken Bauform besonders geeignet auch für Mehrspindelköpfe.

#### Application on multi-spindle machines and transfer lines

Especially suitable, too, for multi-spindle heads due to their slim design.



Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

# SFM

## MK

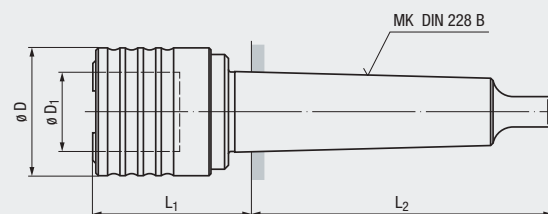
### DIN 228-1

### Form B



Einsatz auf Mehrspindelmaschinen  
und Transferstraßen

For use on multi-spindle  
machines and transfer lines



| Typ<br>Type   |                             |       | MK   | Ø D | Ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> |          |
|---------------|-----------------------------|-------|------|-----|------------------|----------------|----------------|----------|
| <b>SFM 00</b> | M1 - M10<br>(Nr.0 - 3/8)    | EM 00 | MK 1 | 23  | 13               | 39             | 62             | F0100101 |
|               |                             |       | MK 2 | 23  | 13               | 40             | 75             | F0100102 |
| <b>SFM 01</b> | M3 - M14<br>(Nr.4 - 9/16)   | EM 01 | MK 1 | 32  | 19               | 43             | 62             | F0101101 |
|               |                             |       | MK 2 | 32  | 19               | 44             | 75             | F0101102 |
|               |                             |       | MK 3 | 32  | 19               | 44             | 94             | F0101103 |
| <b>SFM 03</b> | M4,5 - M24<br>(Nr.10 - 1")  | EM 03 | MK 2 | 50  | 31               | 61             | 75             | F0103102 |
|               |                             |       | MK 3 | 50  | 31               | 61             | 94             | F0103103 |
|               |                             |       | MK 4 | 50  | 31               | 62             | 117,5          | F0103104 |
| <b>SFM 04</b> | M14 - M36<br>(9/16 - 1 3/8) | EM 04 | MK 3 | 72  | 48               | 90             | 94             | F0104103 |
|               |                             |       | MK 4 | 72  | 48               | 91             | 117,5          | F0104104 |
|               |                             |       | MK 5 | 72  | 48               | 91             | 149,5          | F0104105 |



Morsekegelschaft mit Anzugsgewinde nach DIN 228 A auf Anfrage  
Morse taper shank with clamping thread acc. DIN 228 A upon request

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories

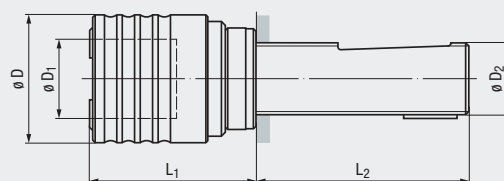


Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738



## SFM

Tr  
DIN 6327-3Einsatz auf Mehrspindelmaschinen  
und TransferstraßenFor use on multi-spindle  
machines and transfer lines

| Typ<br>Type   |  |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | $L_1$ | $L_2$ |  |
|---------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------|-------------------|-------|-------|-------------------------------------------------------------------------------------|
| <b>SFM 00</b> | M1 - M10<br>(Nr.0 - 3/8)                                                          | EM 00                                                                             | Tr 16 x 1,5       | 23              | 13                | 45    | 73    | <b>F0100213</b>                                                                     |
|               |                                                                                   |                                                                                   | Tr 20 x 2         | 23              | 13                | 45    | 76    | F0100214                                                                            |
| <b>SFM 01</b> | M3 - M14<br>(Nr.4 - 9/16)                                                         | EM 01                                                                             | Tr 16 x 1,5       | 32              | 19                | 49    | 73    | <b>F0101213</b>                                                                     |
|               |                                                                                   |                                                                                   | Tr 20 x 2         | 32              | 19                | 49    | 76    | <b>F0101214</b>                                                                     |
|               |                                                                                   |                                                                                   | Tr 28 x 2         | 32              | 19                | 49    | 83    | <b>F0101216</b>                                                                     |
| <b>SFM 03</b> | M4,5 - M24<br>(Nr.10 - 1")                                                        | EM 03                                                                             | Tr 20 x 2         | 50              | 31                | 66    | 76    | <b>F0103214</b>                                                                     |
|               |                                                                                   |                                                                                   | Tr 28 x 2         | 50              | 31                | 66    | 83    | <b>F0103216</b>                                                                     |
|               |                                                                                   |                                                                                   | Tr 36 x 2         | 50              | 31                | 68    | 104   | F0103218                                                                            |
| <b>SFM 04</b> | M14 - M36<br>(9/16 - 1 3/8)                                                       | EM 04                                                                             | Tr 28 x 2         | 72              | 48                | 95    | 83    | F0104216                                                                            |
|               |                                                                                   |                                                                                   | Tr 36 x 2         | 72              | 48                | 97    | 104   | F0104218                                                                            |
|               |                                                                                   |                                                                                   | Tr 48 x 2         | 72              | 48                | 101   | 126   | F0104219                                                                            |

Weitere Ausführungen auf Anfrage  
Further designs upon requestZubehör  
AccessoriesSchnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738



Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

ML  
MMS

SFM

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

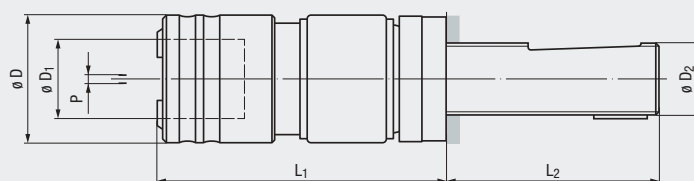
# SFM-NP

Tr  
DIN 6327-3



Einsatz auf Mehrspindelmaschinen  
und Transferstraßen

For use on multi-spindle  
machines and transfer lines



| Typ<br>Type      |  |  | Ø D <sub>2</sub> | Ø D | Ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | P   |  |
|------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|-----|-------------------------------------------------------------------------------------|
| <b>SFM 00-NP</b> | M1 - M10<br>(Nr.0 - 3/8)                                                          | EM 00                                                                             | Tr 16 x 1,5      | 23  | 13               | 65             | 73             | 0,8 | F2110213                                                                            |
|                  |                                                                                   |                                                                                   | Tr 20 x 2        | 23  | 13               | 65             | 76             | 0,8 | F2110214                                                                            |
| <b>SFM 01-NP</b> | M3 - M14<br>(Nr.4 - 9/16)                                                         | EM 01                                                                             | Tr 16 x 1,5      | 32  | 19               | 70             | 73             | 1,4 | F2111213                                                                            |
|                  |                                                                                   |                                                                                   | Tr 20 x 2        | 32  | 19               | 70             | 76             | 1,4 | F2111214                                                                            |
|                  |                                                                                   |                                                                                   | Tr 28 x 2        | 32  | 19               | 70             | 83             | 1,4 | F2111216                                                                            |
| <b>SFM 03-NP</b> | M4,5 - M24<br>(Nr.10 - 1")                                                        | EM 03                                                                             | Tr 20 x 2        | 50  | 31               | 96             | 76             | 2,5 | F2113214                                                                            |
|                  |                                                                                   |                                                                                   | Tr 28 x 2        | 50  | 31               | 96             | 83             | 2,5 | F2113216                                                                            |
|                  |                                                                                   |                                                                                   | Tr 36 x 2        | 50  | 31               | 98             | 104            | 2,5 | F2113218                                                                            |

Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

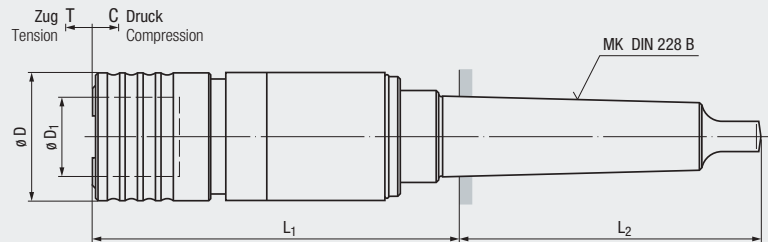
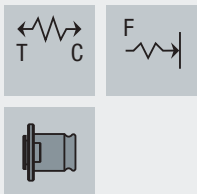
» 717 - 738





## SFM-L-DZ

MK

DIN 228-1  
Form BEinsatz auf Mehrspindelmaschinen  
und TransferstraßenFor use on multi-spindle  
machines and transfer lines

| Typ<br>Type          |  |  | ø D <sub>2</sub> | ø D | ø D <sub>1</sub> | L <sub>1</sub> | L <sub>2</sub> | C  | T  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-----|------------------|----------------|----------------|----|----|-------------------------------------------------------------------------------------|
| <b>SFM 00-L20-DZ</b> | M1 - M10<br>(Nr.0 - 3/8)                                                          | EM 00                                                                             | MK 1             | 23  | 13               | 90             | 62             | 10 | 10 | <b>F0180101.7</b>                                                                   |
|                      |                                                                                   |                                                                                   | MK 2             | 23  | 13               | 91             | 75             | 10 | 10 | <b>F0180102.7</b>                                                                   |
| <b>SFM 00-L30-DZ</b> |                                                                                   |                                                                                   | MK 1             | 23  | 13               | 105            | 62             | 15 | 15 | <b>F0190101.7</b>                                                                   |
|                      |                                                                                   |                                                                                   | MK 2             | 23  | 13               | 106            | 75             | 15 | 15 | <b>F0190102.7</b>                                                                   |
| <b>SFM 01-L20-DZ</b> | M3 - M14<br>(Nr.4 - 9/16)                                                         | EM 01                                                                             | MK 2             | 32  | 19               | 103            | 75             | 10 | 10 | <b>F0181102.7</b>                                                                   |
|                      |                                                                                   |                                                                                   | MK 3             | 32  | 19               | 103            | 94             | 10 | 10 | F0181103.7                                                                          |
| <b>SFM 01-L30-DZ</b> |                                                                                   |                                                                                   | MK 1             | 32  | 19               | 117            | 62             | 15 | 15 | F0191101.7                                                                          |
|                      |                                                                                   |                                                                                   | MK 2             | 32  | 19               | 118            | 75             | 15 | 15 | <b>F0191102.7</b>                                                                   |
|                      |                                                                                   |                                                                                   | MK 3             | 32  | 19               | 118            | 94             | 15 | 15 | <b>F0191103.7</b>                                                                   |
| <b>SFM 01-L40-DZ</b> |                                                                                   |                                                                                   | MK 2             | 32  | 19               | 133            | 75             | 20 | 20 | <b>F0201102.7</b>                                                                   |
|                      |                                                                                   |                                                                                   | MK 3             | 32  | 19               | 133            | 94             | 20 | 20 | <b>F0201103.7</b>                                                                   |
| <b>SFM 03-L30-DZ</b> |                                                                                   | M4,5 - M24<br>(Nr.10 - 1")                                                        | MK 2             | 50  | 31               | 142            | 75             | 15 | 15 | F0183102.7                                                                          |
|                      |                                                                                   |                                                                                   | MK 3             | 50  | 31               | 142            | 94             | 15 | 15 | <b>F0183103.7</b>                                                                   |
| <b>SFM 03-L40-DZ</b> |                                                                                   |                                                                                   | MK 4             | 50  | 31               | 143            | 117,5          | 15 | 15 | <b>F0183104.7</b>                                                                   |
|                      |                                                                                   |                                                                                   | MK 2             | 50  | 31               | 157            | 75             | 20 | 20 | F0193102.7                                                                          |
|                      |                                                                                   |                                                                                   | MK 3             | 50  | 31               | 157            | 94             | 20 | 20 | <b>F0193103.7</b>                                                                   |
|                      |                                                                                   |                                                                                   | MK 4             | 50  | 31               | 158            | 117,5          | 20 | 20 | <b>F0193104.7</b>                                                                   |
| <b>SFM 04-L30-DZ</b> |                                                                                   | M14 - M36<br>(9/16 - 1 3/8)                                                       | MK 4             | 72  | 48               | 189            | 117,5          | 15 | 15 | <b>F0184104.7</b>                                                                   |
|                      |                                                                                   |                                                                                   | MK 5             | 72  | 48               | 190            | 149,5          | 15 | 15 | F0184105.7                                                                          |
| <b>SFM 04-L40-DZ</b> |                                                                                   |                                                                                   | MK 3             | 72  | 48               | 203            | 94             | 20 | 20 | F0194103.7                                                                          |
|                      |                                                                                   |                                                                                   | MK 4             | 72  | 48               | 204            | 117,5          | 20 | 20 | <b>F0194104.7</b>                                                                   |
|                      |                                                                                   |                                                                                   | MK 5             | 72  | 48               | 205            | 149,5          | 20 | 20 | F0194105.7                                                                          |

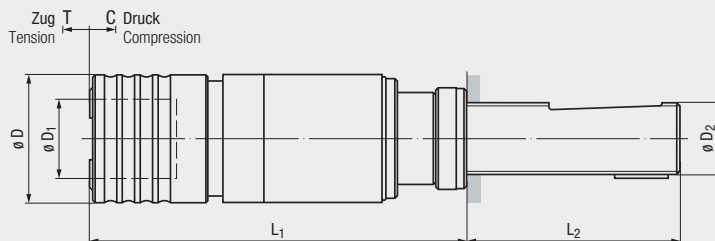
Morsekegelschaft mit Anzugsgewinde nach DIN 228 A auf Anfrage  
Morse taper shank with clamping thread acc. DIN 228 A upon requestWeitere Ausführungen auf Anfrage  
Further designs upon requestZubehör  
AccessoriesSchnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738



# SFM-L-DZ

Tr  
DIN 6327-3



Einsatz auf Mehrspindelmaschinen und Transferstraßen For use on multi-spindle machines and transfer lines

| Typ<br>Type          |                            |       | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | $L_1$ | $L_2$ | C  | T  |                   |
|----------------------|----------------------------|-------|-------------------|-----------------|-------------------|-------|-------|----|----|-------------------|
| <b>SFM 01-L20-DZ</b> | M3 - M14<br>(Nr.4 - 9/16)  | EM 01 | Tr 16 x 1,5       | 32              | 19                | 108   | 73    | 10 | 10 | <b>F0181213.7</b> |
|                      |                            |       | Tr 20 x 2         | 32              | 19                | 108   | 76    | 10 | 10 | <b>F0181214.7</b> |
| <b>SFM 01-L30-DZ</b> |                            |       | Tr 16 x 1,5       | 32              | 19                | 123   | 73    | 15 | 15 | F0191213.7        |
|                      |                            |       | Tr 20 x 2         | 32              | 19                | 123   | 76    | 15 | 15 | <b>F0191214.7</b> |
|                      |                            |       | Tr 28 x 2         | 32              | 19                | 123   | 83    | 15 | 15 | F0191216.7        |
| <b>SFM 01-L40-DZ</b> |                            |       | Tr 16 x 1,5       | 32              | 19                | 138   | 73    | 20 | 20 | F0201213.7        |
|                      |                            |       | Tr 20 x 2         | 32              | 19                | 138   | 76    | 20 | 20 | <b>F0201214.7</b> |
|                      |                            |       | Tr 28 x 2         | 32              | 19                | 138   | 83    | 20 | 20 | <b>F0201216.7</b> |
| <b>SFM 03-L30-DZ</b> | M4,5 - M24<br>(Nr.10 - 1") | EM 03 | Tr 20 x 2         | 50              | 31                | 147   | 76    | 15 | 15 | <b>F0183214.7</b> |
|                      |                            |       | Tr 28 x 2         | 50              | 31                | 147   | 83    | 15 | 15 | <b>F0183216.7</b> |
|                      |                            |       | Tr 36 x 2         | 50              | 31                | 149   | 104   | 15 | 15 | <b>F0183218.7</b> |
| <b>SFM 03-L40-DZ</b> |                            |       | Tr 20 x 2         | 50              | 31                | 162   | 76    | 20 | 20 | F0193214.7        |
|                      |                            |       | Tr 28 x 2         | 50              | 31                | 162   | 83    | 20 | 20 | F0193216.7        |
|                      |                            |       | Tr 36 x 2         | 50              | 31                | 164   | 104   | 20 | 20 | F0193218.7        |



Weitere Ausführungen auf Anfrage  
Further designs upon request

## Zubehör Accessories



Schnellwechsel-Einsätze Typenreihe EM  
Quick-change adapters EM series

» 717 - 738





## Typenreihe SWITCH-MASTER®

### SWITCH-MASTER® Series

#### Einsatz auf CNC-Bearbeitungszentren und Sondermaschinen mit und ohne Synchronspindel

Durch das integrierte Wendegetriebe entfällt der Drehrichtungswechsel der Maschinenspindel beim Rücklauf. Speziell beim Typ SWITCH-MASTER® ergibt sich eine erhebliche Zeiteinsparung durch den patentierten Schaltmechanismus mittels Druckluft.

#### Application on CNC machining centres and special machines with and without synchronous spindle

No change of rotating direction of machine spindle at reverse stroke required due to integrated reverse gear. Especially for the SWITCH-MASTER® considerable saving of time due to patent-protected switch mechanism by compressed air.

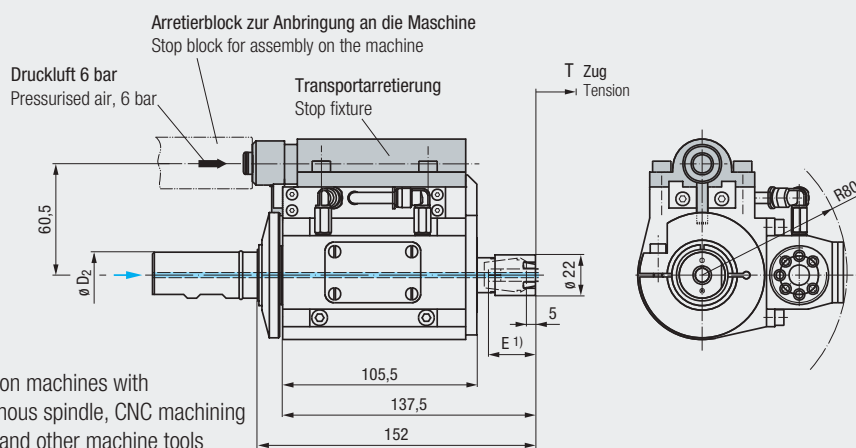
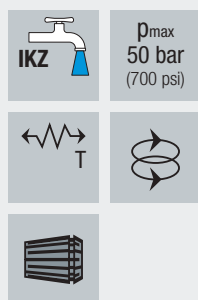


## SWITCH-MASTER®

**Zylinderschaft**  
Cylindrical shank

DIN 1835-1

Form B



**Einsatz auf Maschinen mit Synchronspindel, CNC-Bearbeitungszentren und sonstigen Werkzeugmaschinen**

For use on machines with synchronous spindle, CNC machining centres and other machine tools

| Typ<br>Type                    |  |  |  | $\varnothing D_2$ | Drehzahl [min <sup>-1</sup> ]<br>Speed [rpm] | T | Gewicht<br>Weight |          |
|--------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------|----------------------------------------------|---|-------------------|----------|
| <b>SWITCH-MASTER 16 MV 90°</b> | M4 - M12<br>(Nr.8 - 3/8)                                                            | ER 16 (GB)                                                                          | Hi-Q/ERMC 16                                                                        | 25                | max.<br>3000                                 | 9 | (kg)<br>3,7       | F3381392 |

1) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Der Gewindeschneidapparat benötigt zum Reversieren Hilfsenergie in Form von Druckluft (6  $\pm_{0,5}^1$  bar)  
The tapping attachment requires auxiliary energy = pressurised air (6  $\pm_{0,5}^1$  bar) for reversing

Die Übergabe der Druckluft erfolgt über einen speziellen Arretierblock, der maschinenseitig angebracht sein muss und in den gleichzeitig die Transportarretierung einrastet  
The transfer of pressurised air is effected by means of a special stop block mounted on the machine, and into which the stop fixture engages

Der Gewindeschneidapparat SWITCH-MASTER® kann nur mit Adaptionsschaft und Transportarretierung eingesetzt werden.

Die Anpassung der Transportarretierung an die maschinenseitigen Vorgaben erfolgt durch EMUGE. Bitte wenden Sie sich hierfür an den für Sie zuständigen Vertriebspartner.

The tapping attachment SWITCH-MASTER® can only be used with adapter shank and stop fixture.

The adaptation of the stop fixture to the specifications of the machine is carried out by EMUGE. Please contact your responsible distribution partner for more information.

### Zubehör Accessories



Adaptionsschäfte  
Adapter shanks

» 740



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747

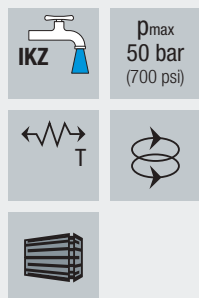


Dichtscheiben Typ DS/ER und Kühlschleiben Typ KS/ER  
Sealing disks type DS/ER and coolant flush disks type KS/ER

» 750

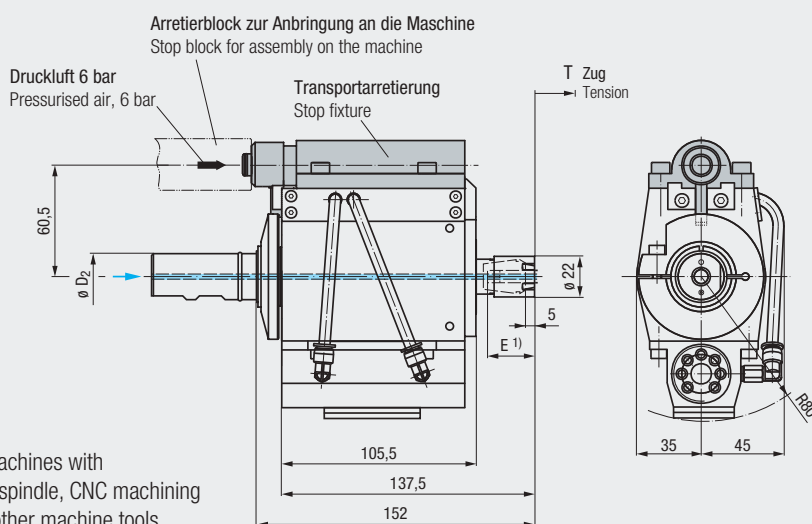
# SWITCH-MASTER®

**Zylinderschaft**  
Cylindrical shank  
DIN 1835-1  
Form B



**Einsatz auf Maschinen mit Synchronspindel, CNC-Bearbeitungszentren und sonstigen Werkzeugmaschinen**

For use on machines with synchronous spindle, CNC machining centres and other machine tools



| Typ<br>Type                     |  |  |  | $\varnothing D_2$ | Drehzahl [min <sup>-1</sup> ]<br>Speed [rpm] | T | Gewicht<br>Weight |          |
|---------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------|----------------------------------------------|---|-------------------|----------|
| <b>SWITCH-MASTER 16 MV 180°</b> | M4 - M12<br>(Nr.8 - 3/8)                                                            | ER 16 (GB)                                                                          | Hi-Q/ERMC 16                                                                        | 25                | max.<br>3000                                 | 9 | (kg)<br>3,7       | F3381397 |

<sup>1)</sup> Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Der Gewindeschneidapparat benötigt zum Reversieren Hilfsenergie in Form von Druckluft ( $6 \pm 1_{-0,5}^1$  bar)  
The tapping attachment requires auxiliary energy = pressurised air ( $6 \pm 1_{-0,5}^1$  bar) for reversing

Die Übergabe der Druckluft erfolgt über einen speziellen Arretierblock, der maschinenseitig angebracht sein muss und in den gleichzeitig die Transportarretierung einrastet  
The transfer of pressurised air is effected by means of a special stop block mounted on the machine, and into which the stop fixture engages

Der Gewindeschneidapparat SWITCH-MASTER® kann nur mit Adaptionsschaft und Transportarretierung eingesetzt werden.

Die Anpassung der Transportarretierung an die maschinenseitigen Vorgaben erfolgt durch EMUGE. Bitte wenden Sie sich hierfür an den für Sie zuständigen Vertriebspartner.

The tapping attachment SWITCH-MASTER® can only be used with adapter shank and stop fixture.

The adaptation of the stop fixture to the specifications of the machine is carried out by EMUGE. Please contact your responsible distribution partner for more information.

## Zubehör Accessories



Adaptionsschäfte  
Adapter shanks

» 740



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und Kühlschleiben Typ KS/ER  
Sealing disks type DS/ER and coolant flush disks type KS/ER

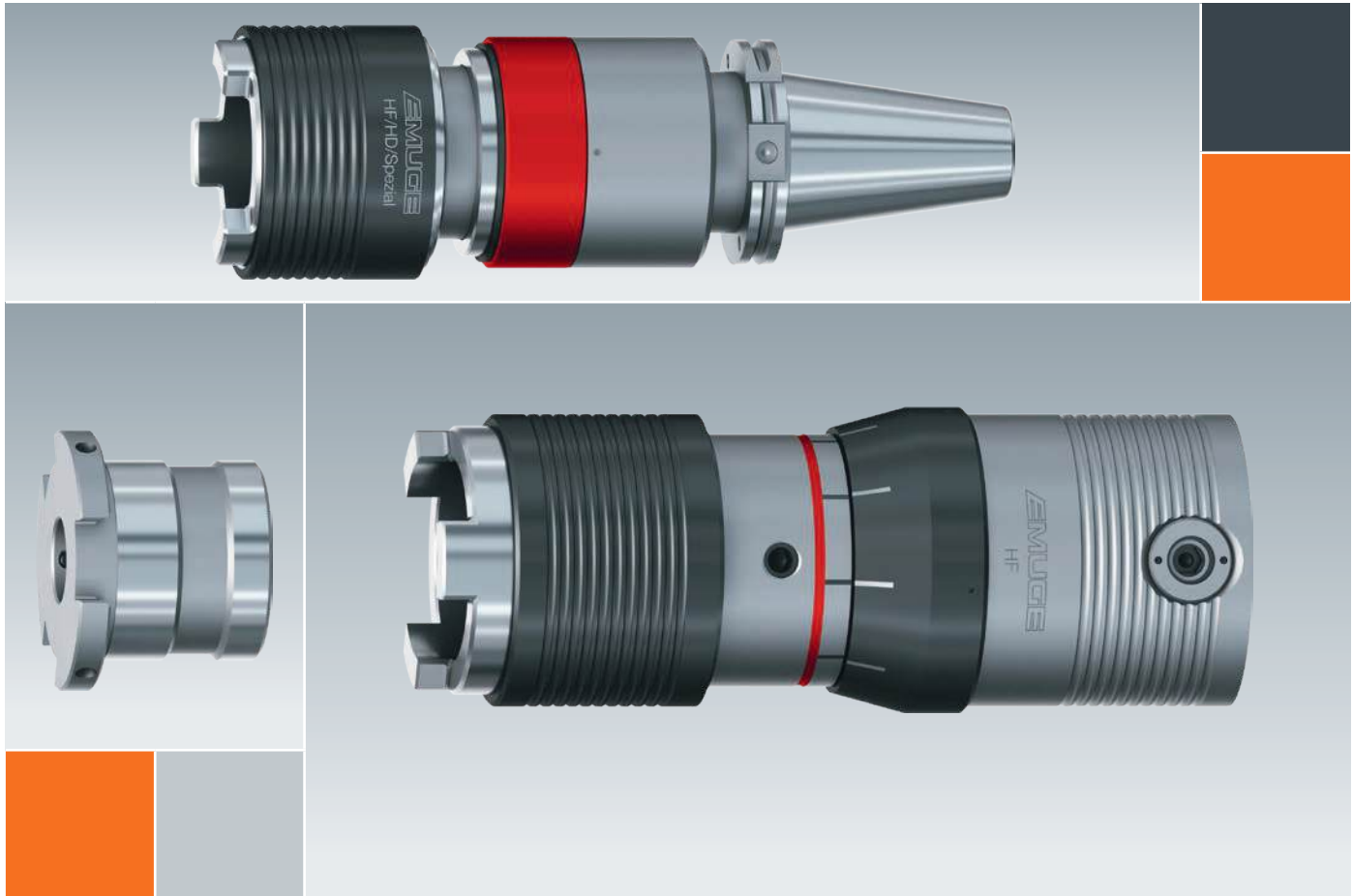
» 750





|                        |
|------------------------|
| Product Finder         |
| Soft-synchro           |
| Speed-synchro          |
| KSN                    |
| MQL MMS                |
| SFM                    |
| SWITCH-MASTER          |
| HF                     |
| EM                     |
| Zubehör<br>Accessories |





## Typenreihe HF HF Series

### Einsatz auf CNC-Bearbeitungszentren und Bohrwerken

Zur Herstellung von großen Gewinden bis M160. Je nach Typ mit Sicherheitsfunktionen wie einstellbarer Überlastkupplung und großem Längenausgleich ausgestattet.

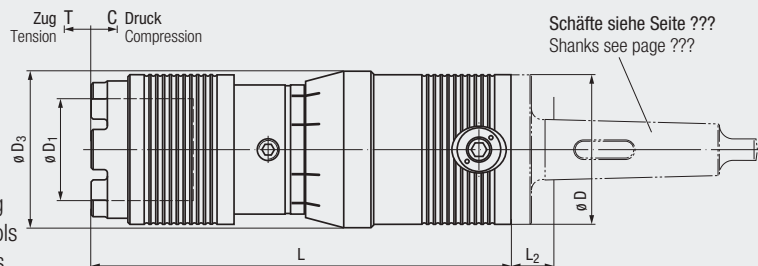
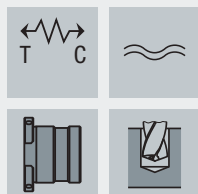
### Application on CNC machining centres and boring mills

For the production of big threads up to M160. Depending on the type: equipped with safety functions just like adjustable overload clutch and large length compensation.





### HF



Schäfte siehe Seite ???  
Shanks see page ???

**Einsatz auf CNC-Bearbeitungszentren, sonstigen Werkzeugmaschinen und Säulenbohrmaschinen**  
For use on CNC machining centres, other machine tools and pillar drilling machines

| Typ<br>Type  |  |  | Max. Drehmoment<br>Max. torque<br>Nm <sup>1)</sup> | $\varnothing D$ | $\varnothing D_1$ | $\varnothing D_3$ | L   | T  | C  | Gewicht<br>Weight<br>(kg) |  |
|--------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------|-----------------|-------------------|-------------------|-----|----|----|---------------------------|-------------------------------------------------------------------------------------|
| <b>HF 20</b> | M24 - M76<br>(1" - 2 1/2)                                                         | HE 2                                                                              | 1300                                               | 110             | 75                | 115               | 308 | 15 | 15 | 14,8                      | <b>F0332999</b>                                                                     |
| <b>HF 30</b> | M36 - M160<br>(1 3/8 - 3 1/2)                                                     | HE 3                                                                              | 3000                                               | 160             | 90                | 160               | 372 | 20 | 20 | 36,5                      | <b>F0333999</b>                                                                     |

<sup>1)</sup> Maximal zulässiger Drehmoment-Wert  
Maximum permissible torque

Ausführung mit innerer Kühlschmierstoff-Zufuhr bis 10 bar auf Anfrage erhältlich  
Available with internal coolant supply up to 10 bar upon request

### Zubehör Accessories



Schnellwechsel-Einsätze Typ HE  
Quick-change adapters, type HE

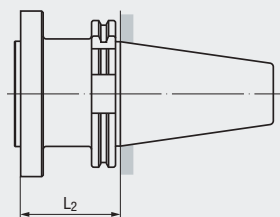
» 714 - 715



Schäfte Typ HF  
Shanks type HF

» 711



**HF****SK**DIN ISO 7388-1  
Form AD

| Für Typ<br>For type | SK    | L <sub>2</sub> | Gewicht<br>Weight<br>(kg) |                  |
|---------------------|-------|----------------|---------------------------|------------------|
| <b>HF 20</b>        | SK 50 | 66,25          | 3,8                       | <b>F10719112</b> |
| <b>HF 30</b>        | SK 50 | 51,25          | 5,8                       | <b>F10719389</b> |



Ausführung mit innerer Kühlschmierstoff-Zufuhr  
bis 10 bar auf Anfrage erhältlich  
Available with internal coolant supply  
up to 10 bar upon request

Product  
FinderSoft-  
synchroSpeed-  
synchro

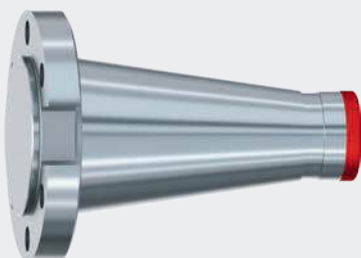
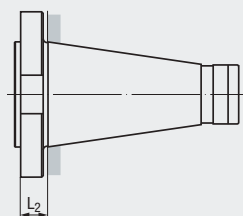
KSN

MQL  
MMS

SFB

SWITCH-  
MASTER**HF**

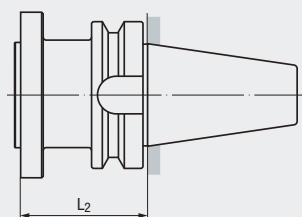
EM

Zubehör  
Accessories**HF****SK**DIN 2080-1  
Form A

| Für Typ<br>For type | SK    | L <sub>2</sub> | Gewicht<br>Weight<br>(kg) |                   |
|---------------------|-------|----------------|---------------------------|-------------------|
| <b>HF 20</b>        | SK 40 | 22             | 1,7                       | F033205.05        |
|                     | SK 50 | 18             | 3,0                       | <b>F033205.01</b> |
| <b>HF 30</b>        | SK 50 | 19             | 4,3                       | <b>F033305.01</b> |



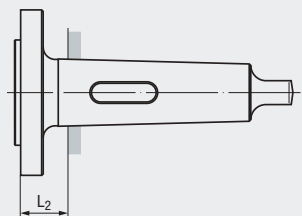
Ausführung mit innerer Kühlschmierstoff-Zufuhr  
bis 10 bar auf Anfrage erhältlich  
Available with internal coolant supply  
up to 10 bar upon request

**HF****BT**DIN ISO 7388-2  
Form J

| Für Typ<br>For type | BT    | L <sub>2</sub> | Gewicht<br>Weight<br>(kg) |                  |
|---------------------|-------|----------------|---------------------------|------------------|
| <b>HF 20</b>        | BT 50 | 85,15          | 4,7                       | <b>F10725080</b> |
| <b>HF 30</b>        | BT 50 | 64,2           | 6,7                       | F10725120        |



Ausführung mit innerer Kühlschmierstoff-Zufuhr  
bis 10 bar auf Anfrage erhältlich  
Available with internal coolant supply  
up to 10 bar upon request

**HF****MK**DIN 228-1  
Form B

| Für Typ<br>For type | MK   | L <sub>2</sub> | Gewicht<br>Weight<br>(kg) |                   |
|---------------------|------|----------------|---------------------------|-------------------|
| <b>HF 20</b>        | MK 4 | 34             | 1,7                       | F033201.04        |
|                     | MK 5 | 32             | 2,8                       | <b>F033201.05</b> |
|                     | MK 6 | 31             | 4,8                       | <b>F033201.06</b> |
| <b>HF 30</b>        | MK 5 | 30             | 3,9                       | <b>F033301.01</b> |
|                     | MK 6 | 32             | 6,2                       | <b>F033301.02</b> |



Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

HF

EM

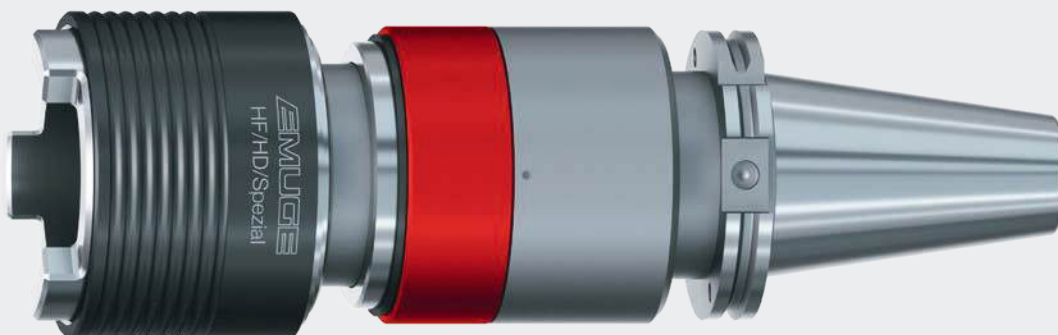
Zubehör  
Accessories

# HF/HD/Spezial

## SK

### DIN ISO 7388-1

### Form AD



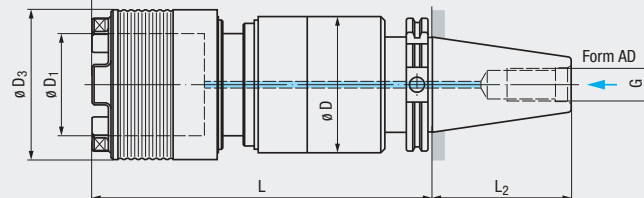
$p_{max}$   
50 bar  
(700 psi)



T C

Zug T C Druck  
Tension Compression

Mit Bohrung für Datenträger DIN 69873  
With bore for data chip according to DIN 69873



Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen

For use on CNC machining centres  
and other machine tools

| Typ<br>Type      |  |  | SK    | Ø D | Ø D1 | Ø D3 | L   | L2     | G   | T  | C  | Gewicht<br>Weight<br>(kg) |  |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------|-----|------|------|-----|--------|-----|----|----|---------------------------|---------------------------------------------------------------------------------------|
| HF 20/HD/Spezial | M24 - M76<br>(1" - 2 1/2)                                                           | HE 2/IKZZ                                                                           | SK 50 | 100 | 75   | 110  | 250 | 101,75 | M24 | 15 | 15 | 12                        | F0332153.1.49                                                                         |

## Zubehör Accessories



Schnellwechsel-Einsätze Typ HE/IKZZ  
Quick-change adapters, type HE/IKZZ

» 714



Schnellwechsel-Aufnahmen der  
Typenreihe Softsynchro® zur  
synchronen Herstellung von großen  
Gewinden siehe Seite 621 und 630

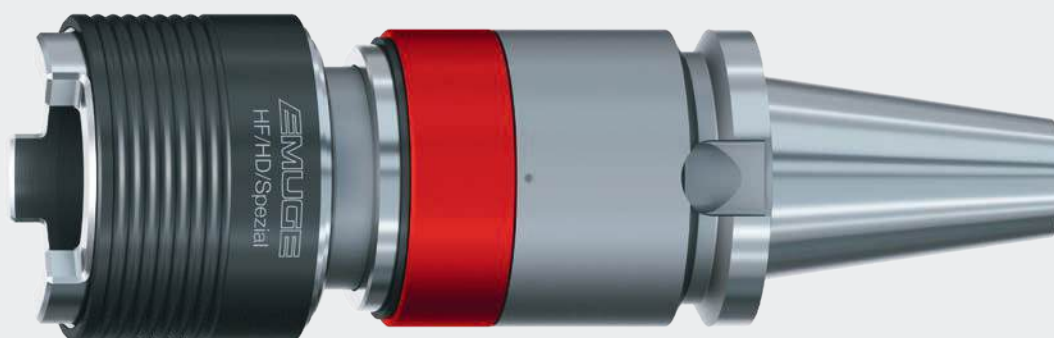
Quick-change tap holders of our  
Softsynchro® series for the synchronous  
production of large threads,  
see pages 621 and 630

# HF/HD/Spezial

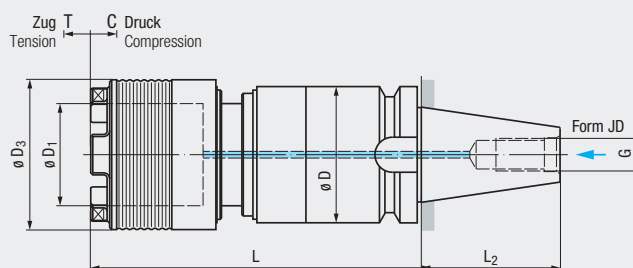
## BT

DIN ISO 7388-2

Form JD



$p_{\max}$   
50 bar  
(700 psi)



Einsatz auf CNC-Bearbeitungszentren  
und sonstigen Werkzeugmaschinen

For use on CNC machining centres  
and other machine tools

| Typ<br>Type      |  |  | BT    | $\varnothing D$ | $\varnothing D_1$ | $\varnothing D_3$ | L   | $L_2$ | G   | T  | C  | Gewicht<br>Weight<br>(kg) |  |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------|-----------------|-------------------|-------------------|-----|-------|-----|----|----|---------------------------|---------------------------------------------------------------------------------------|
| HF 20/HD/Spezial | M24 - M76<br>(1" - 2 1/2")                                                          | HE 2/IKZZ                                                                           | BT 50 | 100             | 75                | 110               | 248 | 101,8 | M24 | 15 | 15 | 12                        | F0332I93.1.49                                                                         |

## Zubehör

Accessories



Schnellwechsel-Einsätze Typ HE/IKZZ  
Quick-change adapters, type HE/IKZZ

» 714



Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

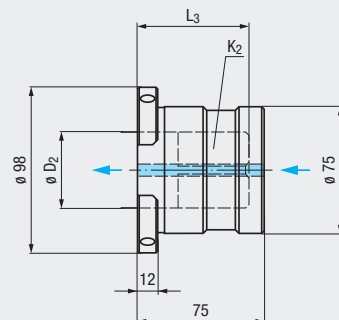
HF

EM

Zubehör  
Accessories

# HE 2/IKZZ

Für Gewindebohrer/Gewindeformer  
For taps/cold-forming taps



p<sub>max</sub>  
50 bar  
(700 psi)

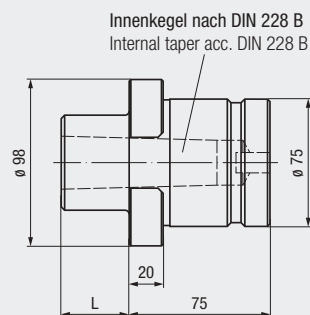
| DIN              |                |                                                   |                | Gewicht<br>Weight |                   |
|------------------|----------------|---------------------------------------------------|----------------|-------------------|-------------------|
| Ø D <sub>2</sub> | K <sub>2</sub> |                                                   | L <sub>3</sub> | (kg)              |                   |
| 18               | 14,5           | M24                                               | 53             | 2,2               | <b>F0632115.6</b> |
| 20               | 16             | M27                                               | 53             | 2,2               | <b>F0632116.6</b> |
| 22               | 18             | M30                                               | 53             | 2,1               | <b>F0632117.6</b> |
| 25               | 20             | M33                                               | 53             | 2,1               | <b>F0632118.6</b> |
| 28               | 22             | M36                                               | 53             | 2,1               | <b>F0632119.6</b> |
| 32               | 24             | M39 - M42                                         | 53             | 2,0               | <b>F0632120.6</b> |
| 36               | 29             | M45 - M48                                         | 66             | 1,9               | <b>F0632121.6</b> |
| 40               | 32             | M52 - M56                                         | 66             | 1,8               | <b>F0632122.6</b> |
| 45               | 35             | M60                                               | 66             | 1,7               | <b>F0632123.6</b> |
| 50               | 39             | M64 - M76 / M80 <sup>1)</sup> - M90 <sup>1)</sup> | 66             | 1,6               | <b>F0632124.6</b> |
| 56               | 44             | M92 <sup>1)</sup> - M120 <sup>1)</sup>            | 66             | 1,4               | <b>F0632125.6</b> |

<sup>1)</sup> Feingewinde  
Fine threads

| ISO              |                |                                             |                | Gewicht<br>Weight |                   |
|------------------|----------------|---------------------------------------------|----------------|-------------------|-------------------|
| Ø D <sub>2</sub> | K <sub>2</sub> |                                             | L <sub>3</sub> | (kg)              |                   |
| 18               | 14             | M24                                         | 53             | 2,2               | F0632218.6        |
| 20               | 16             | M27 - M30                                   | 53             | 2,2               | <b>F0632116.6</b> |
| 22,4             | 18             | M33                                         | 53             | 2,1               | F0632220.6        |
| 25               | 20             | M36                                         | 53             | 2,1               | <b>F0632118.6</b> |
| 28               | 22,4           | M39 - M42                                   | 53             | 2,1               | F0632222.6        |
| 31,5             | 25             | M45 - M48                                   | 53             | 2,0               | F0632223.6        |
| 35,5             | 28             | M52 - M56                                   | 66             | 1,9               | F0632224.6        |
| 40               | 31,5           | M60 - M64                                   | 66             | 1,8               | F0632225.6        |
| 45               | 35,5           | M68 - M75                                   | 66             | 1,7               | F0632226.6        |
| 50               | 40             | M76 / M80 <sup>1)</sup> - M90 <sup>1)</sup> | 66             | 1,6               | F0632227.6        |
| 56               | 45             | M92 <sup>1)</sup> - M100 <sup>1)</sup>      | 66             | 1,4               | F0632228.6        |

# HE 2

Zum Bohren und Senken  
For drilling and countersinking

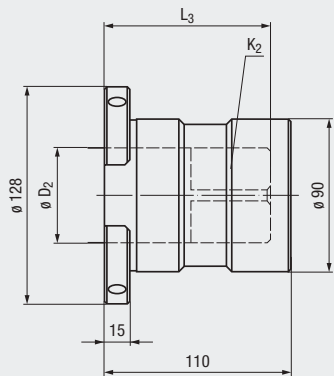


| Innenkegel<br>Internal taper |    | Gewicht<br>Weight |          |
|------------------------------|----|-------------------|----------|
| MK                           | L  | (kg)              |          |
| MK 3                         | 25 | 3,2               | F0642803 |
| MK 4                         | 48 | 3,3               | F0642804 |
| MK 5                         | 80 | 3,4               | F0642805 |



HE 3

Für Gewindebohrer/Gewindeformer  
For taps/cold-forming taps



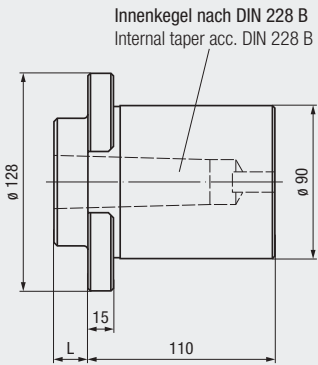
| DIN              |                |  | L <sub>3</sub> | Gewicht<br>Weight<br>(kg) |  |
|------------------|----------------|-----------------------------------------------------------------------------------|----------------|---------------------------|-------------------------------------------------------------------------------------|
| ø D <sub>2</sub> | K <sub>2</sub> |                                                                                   |                |                           |                                                                                     |
| 28               | 22             | M36                                                                               | 76             | 4,4                       | F0633119                                                                            |
| 32               | 24             | M39 - M42                                                                         | 76             | 4,3                       | F0633120                                                                            |
| 36               | 29             | M45 - M48                                                                         | 76             | 4,2                       | F0633121                                                                            |
| 40               | 32             | M52 - M56                                                                         | 76             | 4,0                       | F0633122                                                                            |
| 45               | 35             | M60                                                                               | 76             | 3,9                       | F0633123                                                                            |
| 50               | 39             | M64 - M90                                                                         | 76             | 3,7                       | F0633124                                                                            |
| 56               | 44             | M92 - M120                                                                        | 98             | 3,4                       | F0633125                                                                            |
| 63               | 49             | M122 - M150                                                                       | 98             | 3,0                       | F0633126                                                                            |
| 70               | 55             | M155 - M160                                                                       | 98             | 2,7                       | F0633127                                                                            |

ISO-Ausführungen auf Anfrage erhältlich  
ISO designs available upon request

DIN- oder ISO-Ausführungen mit innerer Kühlschmierstoff-Zufuhr bis 10 bar auf Anfrage erhältlich  
DIN or ISO designs available with internal coolant supply up to 10 bar upon request

HE 3

Zum Bohren und Senken  
For drilling and countersinking



| Innenkegel<br>Internal taper | L   | Gewicht<br>Weight<br>(kg) |  |
|------------------------------|-----|---------------------------|---------------------------------------------------------------------------------------|
| MK                           |     |                           |                                                                                       |
| MK 4                         | 20  | 5,9                       | F0643804                                                                              |
| MK 5                         | 50  | 6,0                       | F0643805                                                                              |
| MK 6                         | 115 | 5,8                       | F0643806                                                                              |





|                        |
|------------------------|
| Product Finder         |
| Soft-synchro           |
| Speed-synchro          |
| KSN                    |
| MQL MMS                |
| SFM                    |
| SWITCH-MASTER          |
| HF                     |
| EM                     |
| Zubehör<br>Accessories |







## Typenreihe EM EM Series

### Passend zu all unseren Schnellwechsel-Aufnahmen der Typenreihen KSN und SFM

Je nach Typ mit Kühlschmierstoff-Zufuhr durch das Zentrum des Werkzeugs oder am Schaft entlang, Überlastkupplung und Längennachstellung.

Die Spannung des Werkzeugs erfolgt je nach Typ durch ein Kugelspannsystem, Spannzangen Typ ER (GB), Spannzangen Typ PGR (GB) oder durch unser E-Lock-System.

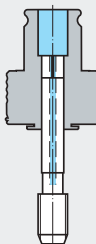
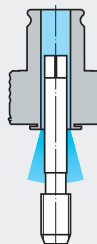
### Suitable for all our quick-change tap holders of KSN and SFM series

Depending on the type: with coolant supply through the tool centre or along the shank, overload clutch and length adjustment.

Clamping of the tool is achieved – depending on the type – by a ball clamping system, collets type ER (GB), collets type PGR (GB) or by our E-Lock system.



| Product Finder         |
|------------------------|
| Soft-synchro           |
| Speed-synchro          |
| KSN                    |
| ML MMS                 |
| SFM                    |
| SWITCH-MASTER          |
| HF                     |
| EM                     |
| Zubehör<br>Accessories |

| DIN                                                                               | ISO                                                                               | Werkzeug-Adaptierung<br>Tool adaptation                                                                                  |                                                   |                                                                                                    |                                                                                   | Funktionen<br>Functions              |                                                                                   | Kühlung und Schmierung<br>Cooling and lubrication                                   |                                                                                     |                                                                                     |                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------|
|  |  | Schnellwechsel-Kugelspannsystem oder Klemmung am Vierkant<br>Quick-change ball clamping system or clamping on the square | Spannzangen, Typ ER (GB)<br>Collets, type ER (GB) | Spannzangen, Typ PGR-GB<br>Collets, type PGR-GB                                                    |  | Überlastkupplung<br>Overload clutch  |  | Längennachstellung 2 mm<br>Length readjustment 2 mm                                 |  | Längennachstellung<br>Length readjustment                                           |                                                     |
|                                                                                   |                                                                                   |                                       |                                                   | Arretierung über formschlüssige Rille am Vierkant<br>Locking with form-positive slot on the square |                                                                                   | Großer Griffing<br>Large ring handle |                                                                                   |  | Durch das Zentrum des Werkzeugs<br>Through the tool axis                            |  | Entlang des Werkzeugschafts<br>Along the tool shank |

Seite · Page

|                |         |     |   |   |   |   |   |   |   |   |   |
|----------------|---------|-----|---|---|---|---|---|---|---|---|---|
| EM             | 720     | 721 | ■ |   |   |   |   |   |   | ■ |   |
| EM-E           | 722     | 722 | ■ |   |   |   |   |   |   | ■ |   |
| EM/IKZ         | 723     |     | ■ |   |   |   |   |   |   |   | ■ |
| EM-QuickLock   | 724     |     | ■ |   |   |   |   |   | ■ | ■ |   |
| EM-E-Lock      | 725     |     | ■ |   |   |   |   | ■ |   | ■ |   |
| EM-U           | 726     | 727 | ■ |   | ■ |   |   |   |   | ■ |   |
| EM-U-E         | 728     | 728 | ■ |   | ■ |   |   |   |   | ■ |   |
| EM-U/IKZ       | 729     |     | ■ |   | ■ |   |   |   |   |   | ■ |
| EM-L           | 730     | 731 | ■ |   |   |   | ■ |   |   | ■ |   |
| EM-UL          | 732     |     | ■ |   | ■ |   | ■ |   |   | ■ |   |
| EM-Z/ER/IKZ    | 733     |     |   | ■ |   |   |   |   |   | ■ | ■ |
| EM-Z/QuickLock | 734     |     |   | ■ |   | ■ |   |   | ■ | ■ | ■ |
| EM-L/ER/IKZ    | 735     |     |   | ■ |   |   | ■ |   |   | ■ | ■ |
| EM/PGR/IKZ     | 736     |     |   |   | ■ |   |   |   |   | ■ |   |
| EM-SE          | 737     |     |   |   |   |   |   |   |   |   |   |
| EM-R           | 738     |     |   |   |   |   |   |   |   |   |   |
| EM/MQL         | 696     |     | ■ |   |   |   |   |   | ■ | ■ |   |
| EM-Z/MQL       | 697-698 |     |   | ■ |   |   |   |   | ■ | ■ |   |



| Kühlung und Schmierung<br>Cooling and lubrication                                |                                                                       |                                                                                   |                                                                       | Empfohlene Einsatzgebiete<br>Recommended range of application                     |                                                                                                   |                                                                                   |                                        |                                                                                   |                                                |                                                                                   |                                                                       |                                                                                   |                                                         |                                                                                   |                                                                                  |                                                                                   |                                                                     |                                                                                   |                                                                 |                                                                                     |                                                                                                              |                                                                                     |                                                                             |  |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|--|
|  | Innere Kühlschmierstoff-Zufuhr (IKZ)<br>Internal coolant supply (IKZ) |  | Minimale Mengenschmierung (MMS)<br>Minimum-quantity lubrication (MQL) |  | Kühlschmierstoff-Druck am Futtereintritt<br>Coolant-lubricant pressure at the entry to the holder |  | Grundlochgewinde<br>Blind hole threads |  | Durchgangslöschgewinde<br>Through hole threads |  | Für Regelgewinde und Feingewinde<br>For coarse thread and fine thread |  | Speziell für Feingewinde<br>Especially for fine threads |  | Zum Spannen von Vollhartmetall-Werkzeugen<br>For clamping of solid carbide tools |  | Für die Hochgeschwindigkeitsbearbeitung<br>For high-speed machining |  | Hoher Kühlschmierstoff-Druck<br>High coolant-lubricant pressure |  | Einsatz auf Mehrspindelmaschinen und Transferstraßen<br>For use on multi-spindle machines and transfer lines |  | Zur Herstellung von Außengewinden<br>For the production of external threads |  |
|                                                                                  |                                                                       |                                                                                   |                                                                       | $p_{max}$<br>50 bar<br>(700 psi)                                                  |                                                                                                   |                                                                                   |                                        |                                                                                   |                                                |                                                                                   |                                                                       |                                                                                   |                                                         |                                                                                   |                                                                                  |                                                                                   |                                                                     |                                                                                   |                                                                 |                                                                                     |                                                                                                              |                                                                                     |                                                                             |  |
|                                                                                  |                                                                       |                                                                                   |                                                                       | $p_{max}$<br>6 bar<br>(85 psi)                                                    |                                                                                                   |                                                                                   |                                        |                                                                                   |                                                |                                                                                   |                                                                       |                                                                                   |                                                         |                                                                                   |                                                                                  |                                                                                   |                                                                     |                                                                                   |                                                                 |                                                                                     |                                                                                                              |                                                                                     |                                                                             |  |

Product  
FinderSoft-  
synchroSpeed-  
synchro

KSN

MQL  
MMS

SFI

SWITCH-  
MASTER

HF

EM

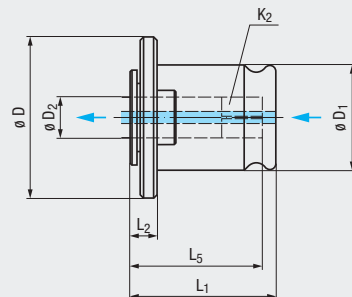
Zubehör  
Accessories

|   |   |   |   |   |   |   |   |   |   |   |   |   |                |
|---|---|---|---|---|---|---|---|---|---|---|---|---|----------------|
| ■ |   | ■ |   |   | ■ | ■ |   |   |   |   |   |   | EM             |
| ■ |   | ■ |   |   | ■ |   | ■ |   |   |   |   |   | EM-E           |
| ■ |   | ■ |   |   | ■ | ■ |   |   |   |   |   |   | EM/IKZ         |
| ■ |   | ■ |   |   | ■ | ■ |   |   |   |   |   |   | EM-QuickLock   |
| ■ |   | ■ |   |   | ■ | ■ |   | ■ | ■ | ■ |   |   | EM-E-Lock      |
| ■ |   | ■ |   | ■ |   | ■ |   |   |   |   |   |   | EM-U           |
| ■ |   | ■ |   | ■ |   |   | ■ |   |   |   |   |   | EM-U-E         |
| ■ |   | ■ |   | ■ |   | ■ |   |   |   |   |   |   | EM-U/IKZ       |
| ■ |   | ■ |   |   | ■ | ■ |   |   |   |   | ■ |   | EM-L           |
| ■ |   | ■ |   | ■ |   | ■ |   |   |   |   | ■ |   | EM-UL          |
| ■ |   | ■ |   |   | ■ | ■ |   | ■ | ■ | ■ |   |   | EM-Z/ER/IKZ    |
| ■ |   | ■ |   |   | ■ | ■ |   | ■ | ■ | ■ |   |   | EM-Z/QuickLock |
| ■ |   | ■ |   |   | ■ | ■ |   | ■ | ■ | ■ | ■ |   | EM-L/ER/IKZ    |
| ■ |   | ■ |   |   | ■ | ■ |   | ■ | ■ | ■ |   |   | EM/PGR/IKZ     |
|   |   |   |   |   |   |   |   |   |   |   |   | ■ | EM-SE          |
|   |   |   |   | ■ | ■ | ■ |   |   |   |   |   |   | EM-R           |
|   | ■ |   | ■ |   | ■ | ■ |   |   |   |   |   |   | EM/MQL         |
|   | ■ |   | ■ |   | ■ | ■ |   | ■ | ■ |   |   |   | EM-Z/MQL       |



# EM

# DIN



$p_{max}$   
50 bar  
(700 psi)



Typ · Type

**EM 00**

**EM 01**

**EM 03**

**EM 04**

**EM 05**



M1 - M10

M3 - M14

M4,5 - M24

M14 - M36

M22 - M48

$\varnothing D$

23

30

48

70

92

$\varnothing D_1$

13

19

31

48

60

$L_1$

27

29

45

67

111

$L_2$

7

7

10

11

48

# DIN

| $\varnothing D_2$ | $K_2$ |           |           |                 | $L_5$ |                 | $L_5$ |                 | $L_5$ |                 | $L_5$ |                 | $L_5$ |
|-------------------|-------|-----------|-----------|-----------------|-------|-----------------|-------|-----------------|-------|-----------------|-------|-----------------|-------|
| 2,5               | 2,1   | M1 - M1,8 | M3,5      | <b>F0560100</b> | 20    |                 |       |                 |       |                 |       |                 |       |
| 2,8               | 2,1   | M2 - M2,6 | M4        | <b>F0560101</b> | 20    |                 |       |                 |       |                 |       |                 |       |
| 3,5               | 2,7   | M3        | M4,5 - M5 | <b>F0560102</b> | 21    | <b>F0561102</b> | 23    |                 |       |                 |       |                 |       |
| 4                 | 3     | M3,5      | M5,5      | <b>F0560103</b> | 21    | <b>F0561103</b> | 23    |                 |       |                 |       |                 |       |
| 4,5               | 3,4   | M4        | M6        | <b>F0560104</b> | 21    | <b>F0561104</b> | 23    |                 |       |                 |       |                 |       |
| 6                 | 4,9   | M4,5 - M6 | M8        | <b>F0560106</b> | 23    | <b>F0561106</b> | 25    | <b>F0563106</b> | 37    |                 |       |                 |       |
| 7                 | 5,5   | M7        | M9 - M10  | <b>F0560107</b> | 23    | <b>F0561107</b> | 25    | <b>F0563107</b> | 37    |                 |       |                 |       |
| 8                 | 6,2   | M8        | M11       | <b>2)</b>       |       | <b>F0561108</b> | 26    | <b>F0563108</b> | 38    |                 |       |                 |       |
| 9                 | 7     | M9        | M12       |                 |       | <b>F0561109</b> | 27    | <b>F0563109</b> | 39    |                 |       |                 |       |
| 10                | 8     | M10       |           |                 |       | <b>F0561110</b> | 27    | <b>F0563110</b> | 40    |                 |       |                 |       |
| 11                | 9     |           | M14       |                 |       | <b>F0561111</b> | 27    | <b>F0563111</b> | 41    | <b>F0564111</b> | 53    |                 |       |
| 12                | 9     |           | M16       |                 |       | <b>2)</b>       |       | <b>F0563112</b> | 41    | <b>F0564112</b> | 53    |                 |       |
| 14                | 11    |           | M18       |                 |       |                 |       | <b>F0563113</b> | 43    | <b>F0564113</b> | 55    |                 |       |
| 16                | 12    |           | M20       |                 |       |                 |       | <b>F0563114</b> | 44    | <b>F0564114</b> | 56    |                 |       |
| 18                | 14,5  |           | M22 - M24 |                 |       |                 |       | <b>F0563115</b> | 44    | <b>F0564115</b> | 58    | <b>F0565115</b> | 94    |
| 20                | 16    |           | M27       |                 |       |                 |       | <b>2)</b>       |       | <b>F0564116</b> | 60    | <b>F0565116</b> | 96    |
| 22                | 18    |           | M30       |                 |       |                 |       | <b>2)</b>       |       | <b>F0564117</b> | 62    | <b>F0565117</b> | 98    |
| 25                | 20    |           | M33       |                 |       |                 |       |                 |       | <b>F0564118</b> | 64    | <b>F0565118</b> | 100   |
| 28                | 22    |           | M36       |                 |       |                 |       |                 |       | <b>F0564119</b> | 66    | <b>F0565119</b> | 102   |
| 32                | 24    |           | M39 - M42 |                 |       |                 |       |                 |       | <b>2)</b>       |       | <b>F0565120</b> | 104   |
| 36                | 29    |           | M45 - M48 |                 |       |                 |       |                 |       | <b>2)</b>       |       | <b>F0565121</b> | 109   |
| 40                | 32    |           | M52 - M56 |                 |       |                 |       |                 |       |                 |       | <b>2)</b>       |       |
| 45                | 35    |           | M68       |                 |       |                 |       |                 |       |                 |       | <b>2)</b>       |       |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

2) Schnellwechsel-Einsätze mit erweitertem Spannbereich Typ EM-E zum Schneiden von Feingewinden MF siehe Seite 722  
Quick-change adapters with extended clamping range type EM-E for the cutting of fine threads MF, see page 722

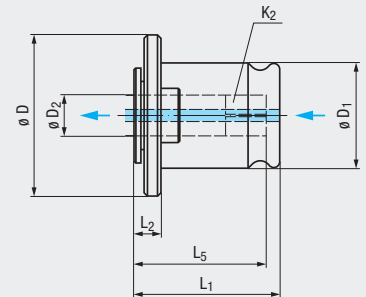


EM

ISO



$p_{\max}$   
50 bar  
(700 psi)

Product  
FinderSoft-  
synchroSpeed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

Typ · Type

 $\varnothing D$  $\varnothing D_1$  $L_1$  $L_2$ 

EM 00

M1 - M9

EM 01

M3,5 - M14

EM 03

M6 - M24

EM 04

M14 - M42

EM 05

M24 - M48

ISO

| $\varnothing D_2$ | $K_2$ |             |           |                 | $L_5$ |                 | $L_5$ |                 | $L_5$ |                 | $L_5$ |                 | $L_5$ |
|-------------------|-------|-------------|-----------|-----------------|-------|-----------------|-------|-----------------|-------|-----------------|-------|-----------------|-------|
| 2,24              | 1,8   |             | M3        | <b>F0560200</b> | 19    |                 |       |                 |       |                 |       |                 |       |
| 2,5               | 2     | M1 - M2     | M3,5      | <b>F0560201</b> | 19    |                 |       |                 |       |                 |       |                 |       |
| 2,8               | 2,24  | M2,2 - M2,5 |           | <b>F0560202</b> | 20    |                 |       |                 |       |                 |       |                 |       |
| 3,15              | 2,5   | M3          | M4        | <b>F0560203</b> | 20    |                 |       |                 |       |                 |       |                 |       |
| 3,55              | 2,8   | M3,5        | M4,5      | <b>F0560204</b> | 20    | <b>F0561204</b> | 22    |                 |       |                 |       |                 |       |
| 4                 | 3,15  | M4          | M5        | <b>F0560205</b> | 21    | <b>F0561205</b> | 23    |                 |       |                 |       |                 |       |
| 4,5               | 3,55  | M4,5        | M6        | <b>F0560206</b> | 21    | <b>F0561206</b> | 23    |                 |       |                 |       |                 |       |
| 5                 | 4     | M5          |           | <b>F0560207</b> | 22    | <b>F0561207</b> | 24    |                 |       |                 |       |                 |       |
| 5,6               | 4,5   |             | M7        | <b>F0560208</b> | 22    | <b>F0561208</b> | 24    |                 |       |                 |       |                 |       |
| 6,3               | 5     | M6          | M8        | <b>F0560209</b> | 23    | <b>F0561209</b> | 25    | <b>F0563209</b> | 37    |                 |       |                 |       |
| 7,1               | 5,6   | M7          | M9        | <b>F0560210</b> | 23    | <b>F0561210</b> | 25    | <b>F0563210</b> | 37    |                 |       |                 |       |
| 8                 | 6,3   | M8          | M10 - M11 | 2)              |       | <b>F0561211</b> | 26    | <b>F0563211</b> | 38    |                 |       |                 |       |
| 9                 | 7,1   | M9          | M12       |                 |       | <b>F0561212</b> | 27    | <b>F0563212</b> | 39    |                 |       |                 |       |
| 10                | 8     | M10         |           |                 |       | <b>F0561110</b> | 27    | <b>F0563110</b> | 40    |                 |       |                 |       |
| 11,2              | 9     |             | M14       |                 |       | <b>F0561214</b> | 27    | <b>F0563214</b> | 41    | <b>F0564214</b> | 53    |                 |       |
| 12,5              | 10    |             | M16       |                 |       | 2)              |       | <b>F0563215</b> | 42    | <b>F0564215</b> | 54    |                 |       |
| 14                | 11,2  |             | M18 - M20 |                 |       |                 |       | <b>F0563216</b> | 43    | <b>F0564216</b> | 55    |                 |       |
| 16                | 12,5  |             | M22       |                 |       |                 |       | <b>F0563217</b> | 43    | <b>F0564217</b> | 57    |                 |       |
| 18                | 14    |             | M24       |                 |       |                 |       | <b>F0563218</b> | 43    | <b>F0564218</b> | 59    | <b>F0565218</b> | 95    |
| 20                | 16    |             | M27 - M30 |                 |       |                 |       | 2)              |       | <b>F0564116</b> | 61    | <b>F0565116</b> | 97    |
| 22,4              | 18    |             | M33       |                 |       |                 |       | 2)              |       | <b>F0564220</b> | 63    | <b>F0565220</b> | 99    |
| 25                | 20    |             | M36       |                 |       |                 |       |                 |       | <b>F0564118</b> | 65    | <b>F0565118</b> | 101   |
| 28                | 22,4  |             | M39 - M42 |                 |       |                 |       |                 |       | <b>F0564222</b> | 66    | <b>F0565222</b> | 103   |
| 31,5              | 25    |             | M45 - M48 |                 |       |                 |       |                 |       | 2)              |       | <b>F0565223</b> | 105   |
| 35,5              | 28    |             | M52 - M56 |                 |       |                 |       |                 |       | 2)              |       | 2)              |       |
| 40                | 31,5  |             | M60 - M64 |                 |       |                 |       |                 |       |                 |       | 2)              |       |
| 45                | 35,5  |             | M68       |                 |       |                 |       |                 |       |                 |       | 2)              |       |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

2) Schnellwechsel-Einsätze mit erweitertem Spannbereich Typ EM-E zum Schneiden von Feingewinden MF siehe Seite 722  
Quick-change adapters with extended clamping range type EM-E for the cutting of fine threads MF, see page 722



# EM-E

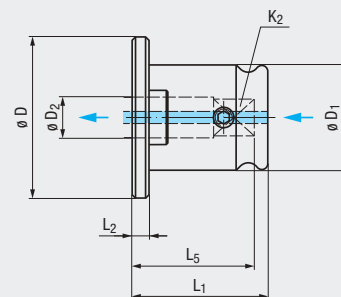
## DIN ISO

Zum Schneiden von Feingewinden  
For the cutting of fine threads

# MF



$p_{max}$   
50 bar  
(700 psi)



Typ · Type

**EM 00-E**

**EM 01-E**

**EM 03-E**

**EM 04-E**

**EM 05-E**

$\varnothing D$

23

30

48

70

92

$\varnothing D_1$

13

19

31

48

60

$L_1$

23,5

25,5

40

61,5

84

$L_2$

7

4

5

6

21

Feingewinde  
Fine thread

# MF



M8 - M11

M16

M27 - M30

M39 - M48

M52 - M60

# DIN



$\varnothing D_2$

$K_2$



$L_5$

$L_5$

$L_5$

$L_5$

$L_5$

8

6,2

M8

M11

**F0800108**

21

**F0801112**

25

**F0803116**

39

**F0803117**

39

**F0804120**

61

**F0805122**

83

12

9

M16

M27

**F0803116**

39

**F0803117**

39

**F0804120**

61

**F0804121**

60

**F0805122**

83

**F0805123**

83

20

16

M27

M30

**F0803116**

39

**F0803117**

39

**F0804120**

61

**F0804121**

60

**F0805122**

83

**F0805123**

83

22

18

M39 - M42

M45 - M48

**F0804120**

61

**F0804121**

60

**F0805122**

83

**F0805123**

83

**F0805122**

83

**F0805123**

83

32

24

M39 - M42

M45 - M48

**F0804120**

61

**F0804121**

60

**F0805122**

83

**F0805123**

83

**F0805122**

83

**F0805123**

83

36

29

M45 - M48

M52 - M56

**F0805122**

83

**F0805123**

83

**F0805122**

83

**F0805123**

83

**F0805122**

83

**F0805123**

83

40

32

M52 - M56

M60

**F0805122**

83

**F0805123**

83

**F0805122**

83

**F0805123**

83

**F0805122**

83

**F0805123**

83

Feingewinde  
Fine thread

# MF



M8 - M11

M16

M27 - M33

M45 - M56

M52 - M68

# ISO



$\varnothing D_2$

$K_2$



$L_5$

$L_5$

$L_5$

$L_5$

$L_5$

8

6,3

M8

M10 - M11

**F0800211**

21

**F0801215**

25

**F0803116**

40

**F0803220**

39

**F0804223**

61

**F0805224**

81

12,5

10

M16

M27 - M30

**F0803116**

40

**F0803220**

39

**F0804223**

61

**F0804224**

61

**F0805224**

81

**F0805225**

82

20

16

M27 - M30

M33

**F0803116**

40

**F0803220**

39

**F0804223**

61

**F0804224**

61

**F0805224**

81

**F0805225**

82

22,4

18

M45 - M48

M52 - M56

**F0804223**

61

**F0804224**

61

**F0805224**

81

**F0805225**

82

**F0805226**

83

**F0805226**

83

31,5

25

M45 - M48

M52 - M56

**F0804223**

61

**F0804224**

61

**F0805224**

81

**F0805225**

82

**F0805226**

83

**F0805226**

83

35,5

28

M52 - M56

M60 - M64

**F0805224**

81

**F0805225**

82

**F0805226**

83

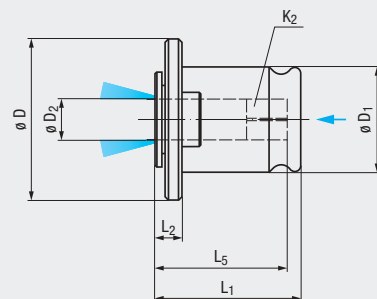
**F0805226**

83

EM/IKZ

Für Gewindebohrer / Gewindeformer ohne innere Kühlschmierstoff-Zufuhr  
For taps / cold-forming taps without internal coolant supply

DIN

Entlang des Werkzeugschafts  
Along the tool shankp<sub>max</sub>  
50 bar  
(700 psi)Product  
FinderSoft-  
synchroSpeed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

Typ · Type

EM 01/IKZ

EM 03/IKZ

EM 04/IKZ

EM 05/IKZ



M3 - M14

M4,5 - M24

M14 - M36

M22 - M48

Ø D

30

48

70

92

Ø D<sub>1</sub>

19

31

48

60

L<sub>1</sub>

29

45

67

111

L<sub>2</sub>

7

10

11

48

DIN

| Ø D <sub>2</sub> | K <sub>2</sub> |  |  |                   |                |                   |    |                   |    |                   |                |  |                |
|------------------|----------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------|----------------|-------------------|----|-------------------|----|-------------------|----------------|--|----------------|
|                  |                |                                                                                    |                                                                                    |                   | L <sub>5</sub> |                   |    | L <sub>5</sub>    |    |                   | L <sub>5</sub> |  | L <sub>5</sub> |
| 2,5              | 2,1            | M1 - M1,8                                                                          | M3,5                                                                               |                   |                |                   |    |                   |    |                   |                |  |                |
| 2,8              | 2,1            | M2 - M2,6                                                                          | M4                                                                                 |                   |                |                   |    |                   |    |                   |                |  |                |
| 3,5              | 2,7            | M3                                                                                 | M4,5 - M5                                                                          | <b>F0561102.5</b> | 23             |                   |    |                   |    |                   |                |  |                |
| 4                | 3              | M3,5                                                                               | M5,5                                                                               | <b>F0561103.5</b> | 23             |                   |    |                   |    |                   |                |  |                |
| 4,5              | 3,4            | M4                                                                                 | M6                                                                                 | <b>F0561104.5</b> | 23             |                   |    |                   |    |                   |                |  |                |
| 6                | 4,9            | M4,5 - M6                                                                          | M8                                                                                 | <b>F0561106.5</b> | 25             | <b>F0563106.5</b> | 37 |                   |    |                   |                |  |                |
| 7                | 5,5            | M7                                                                                 | M9 - M10                                                                           | <b>F0561107.5</b> | 25             | <b>F0563107.5</b> | 37 |                   |    |                   |                |  |                |
| 8                | 6,2            | M8                                                                                 | M11                                                                                | <b>F0561108.5</b> | 26             | <b>F0563108.5</b> | 38 |                   |    |                   |                |  |                |
| 9                | 7              | M9                                                                                 | M12                                                                                | <b>F0561109.5</b> | 27             | <b>F0563109.5</b> | 39 |                   |    |                   |                |  |                |
| 10               | 8              | M10                                                                                |                                                                                    | <b>F0561110.5</b> | 27             | <b>F0563110.5</b> | 40 |                   |    |                   |                |  |                |
| 11               | 9              |                                                                                    | M14                                                                                | <b>F0561111.5</b> | 27             | <b>F0563111.5</b> | 41 | <b>F0564111.5</b> | 53 |                   |                |  |                |
| 12               | 9              |                                                                                    | M16                                                                                |                   |                | <b>F0563112.5</b> | 41 | <b>F0564112.5</b> | 53 |                   |                |  |                |
| 14               | 11             |                                                                                    | M18                                                                                |                   |                | <b>F0563113.5</b> | 43 | <b>F0564113.5</b> | 55 |                   |                |  |                |
| 16               | 12             |                                                                                    | M20                                                                                |                   |                | <b>F0563114.5</b> | 44 | <b>F0564114.5</b> | 56 |                   |                |  |                |
| 18               | 14,5           |                                                                                    | M22 - M24                                                                          |                   |                | <b>F0563115.5</b> | 44 | <b>F0564115.5</b> | 58 | <b>F0565115.5</b> | 94             |  |                |
| 20               | 16             |                                                                                    | M27                                                                                |                   |                |                   |    | <b>F0564116.5</b> | 60 | <b>F0565116.5</b> | 96             |  |                |
| 22               | 18             |                                                                                    | M30                                                                                |                   |                |                   |    | <b>F0564117.5</b> | 62 | <b>F0565117.5</b> | 98             |  |                |
| 25               | 20             |                                                                                    | M33                                                                                |                   |                |                   |    | <b>F0564118.5</b> | 64 | <b>F0565118.5</b> | 100            |  |                |
| 28               | 22             |                                                                                    | M36                                                                                |                   |                |                   |    | <b>F0564119.5</b> | 66 | <b>F0565119.5</b> | 102            |  |                |
| 32               | 24             |                                                                                    | M39 - M42                                                                          |                   |                |                   |    |                   |    | <b>F0565120.5</b> | 104            |  |                |
| 36               | 29             |                                                                                    | M45 - M48                                                                          |                   |                |                   |    |                   |    | <b>F0565121.5</b> | 109            |  |                |





Product  
Finder

 Soft-  
synchro

 Speed-  
synchro

KSN

 MQL  
MMS

SFM

 SWITCH-  
MASTER

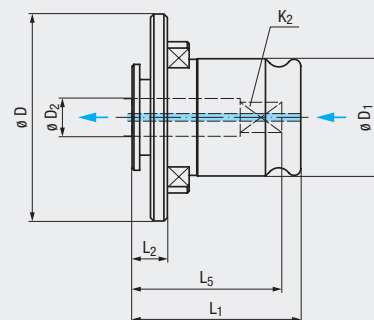
HF

EM

 Zubehör  
Accessories

# EM-QuickLock

## DIN



$p_{max}$   
50 bar  
(700 psi)



Typ · Type

**EM 01-QuickLock**
**EM 03-QuickLock**


M4 - M12

M8 - M20

 $\varnothing D$ 

39

55

 $\varnothing D_1$ 

19

31

 $L_1$ 

29

45

 $L_2$ 

7

10

## DIN

| $\varnothing D_2$ | $K_2$ |  |  |                   | $L_5$ |                   | $L_5$ |  |  |  |  |  |  |
|-------------------|-------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------|-------|-------------------|-------|--|--|--|--|--|--|
| 4,5               | 3,4   | M4                                                                                 | M6                                                                                 | <b>F4521104.6</b> | 23    |                   |       |  |  |  |  |  |  |
| 6                 | 4,9   | M4,5 - M6                                                                          | M8                                                                                 | <b>F4521106.6</b> | 25    |                   |       |  |  |  |  |  |  |
| 7                 | 5,5   | M7                                                                                 | M9 - M10                                                                           | <b>F4521107.6</b> | 25    |                   |       |  |  |  |  |  |  |
| 8                 | 6,2   | M8                                                                                 | M11                                                                                | <b>F4521108.6</b> | 26    | <b>F4523108.6</b> | 38    |  |  |  |  |  |  |
| 9                 | 7     | M9                                                                                 | M12                                                                                | <b>F4521109.6</b> | 27    | <b>F4523109.6</b> | 39    |  |  |  |  |  |  |
| 10                | 8     | M10                                                                                |                                                                                    | <b>F4521110.6</b> | 27    | <b>F4523110.6</b> | 40    |  |  |  |  |  |  |
| 11                | 9     |                                                                                    | M14                                                                                |                   |       | <b>F4523111.6</b> | 41    |  |  |  |  |  |  |
| 12                | 9     |                                                                                    | M16                                                                                |                   |       | <b>F4523112.6</b> | 41    |  |  |  |  |  |  |
| 14                | 11    |                                                                                    | M18                                                                                |                   |       | <b>F4523113.6</b> | 43    |  |  |  |  |  |  |
| 16                | 12    |                                                                                    | M20                                                                                |                   |       | <b>F4523114.6</b> | 44    |  |  |  |  |  |  |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

Weitere Größen auf Anfrage  
Further sizes upon request

Großer Griffing – in Kombination mit Softsynchro® QuickLock – ermöglicht stirnseitige Abdichtung  
Large ring handle – combined with Softsynchro® Quicklock – enables face sealing

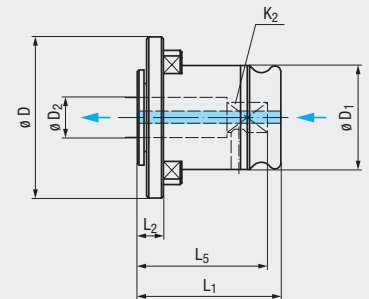
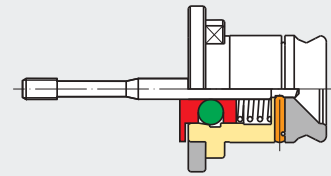
Ausführung mit innerer Kühlschmierstoff-Zufuhr entlang des Werkzeugschafts für Gewindebohrer / Gewindeformer ohne innere Kühlschmierstoff-Zufuhr auf Anfrage  
Design with internal coolant-lubricant supply along the tool shank for taps / cold-forming taps without internal coolant-lubricant supply on request

Bei Verwendung von Vollhartmetall-Gewindebohrern / -Gewindeformern empfehlen wir Schnellwechsel-Einsätze Typ EM-Z/QuickLock, siehe Seite 734  
When using solid carbide taps / cold-forming taps we recommend quick-change adapters type EM-Z/QuickLock, see page 734



## EM-E-Lock

DIN



$p_{max}$   
50 bar  
(700 psi)



E-Lock

Product  
FinderSoft-  
synchroSpeed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

Typ · Type

EM 01-E-Lock

EM 03-E-Lock



M3 - M14

M4,5 - M24

 $\varnothing D$ 

30

48

 $\varnothing D_1$ 

19

31

 $L_1$ 

29

45

 $L_2$ 

7

10

DIN

 $\varnothing D_2$  $K_2$  $L_5$ Rillenform  
Slot shape $L_5$ Rillenform  
Slot shape

| $\varnothing D_2$ | $K_2$ |           |           |          | $L_5$ | Rillenform<br>Slot shape |          | $L_5$ | Rillenform<br>Slot shape |
|-------------------|-------|-----------|-----------|----------|-------|--------------------------|----------|-------|--------------------------|
| 3,5               | 2,7   | M3        | M4,5 - M5 | F2561102 | 23    | A                        |          |       |                          |
| 4                 | 3     | M3,5      | M5,5      | F2561103 | 23    | A                        |          |       |                          |
| 4,5               | 3,4   | M4        | M6        | F2561104 | 23    | A                        |          |       |                          |
| 6                 | 4,9   | M4,5 - M6 | M8        | F2561106 | 25    | A                        | F2563106 | 37    | A                        |
| 7                 | 5,5   | M7        | M9 - M10  | F2561107 | 25    | A                        | F2563107 | 37    | A                        |
| 8                 | 6,2   | M8        | M11       | F2561108 | 26    | A                        | F2563108 | 38    | A                        |
| 9                 | 7     | M9        | M12       | F2561109 | 27    | A                        | F2563109 | 39    | A                        |
| 10                | 8     | M10       |           | F2561110 | 27    | A                        | F2563110 | 40    | A                        |
| 11                | 9     |           | M14       | F2561111 | 27    | A                        | F2563111 | 41    | A                        |
| 12                | 9     |           | M16       |          |       |                          | F2563112 | 41    | B                        |
| 14                | 11    |           | M18       |          |       |                          | F2563113 | 43    | B                        |
| 16                | 12    |           | M20       |          |       |                          | F2563114 | 44    | B                        |
| 18                | 14,5  |           | M22 - M24 |          |       |                          | F2563115 | 44    | B                        |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

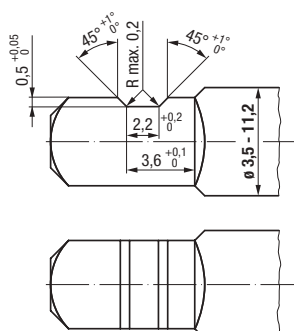
Weitere Größen auf Anfrage  
Further sizes upon request

Ausführungen für Gewindebohrer / Gewindeformer mit ISO-Baumaßen auf Anfrage erhältlich  
Versions for taps / cold-forming taps with ISO dimensions are available on request

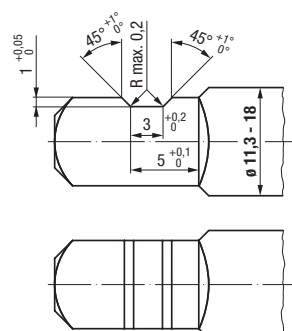
## Bearbeitungsmaße für Rillenform am Gewindebohrer- / Gewindeformer-Vierkant

Machining specifications for the slot shape on the driving square of taps / cold-forming taps

## Form A



## Form B



## EM-E-Lock Lehren

EM-E-Lock gauges

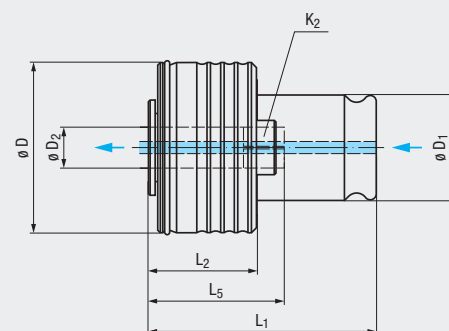


| Typ<br>Type | Rillenform<br>Slot shape |            |
|-------------|--------------------------|------------|
| EM-E-Lock/A | A                        | F256199.02 |
| EM-E-Lock/B | B                        | F256399.02 |



# EM-U

# DIN



$p_{\max}$   
50 bar  
(700 psi)



| Typ · Type                                                                        | EM 00-U  | EM 01-U  | EM 03-U    | EM 04-U   | EM 05-U   |
|-----------------------------------------------------------------------------------|----------|----------|------------|-----------|-----------|
|  | M1 - M10 | M3 - M14 | M4,5 - M24 | M14 - M36 | M22 - M48 |
| ø D                                                                               | 24       | 33       | 50         | 72        | 95        |
| ø D <sub>1</sub>                                                                  | 13       | 19       | 31         | 48        | 60        |
| L <sub>1</sub>                                                                    | 41,5     | 47       | 69         | 101       | 138       |
| L <sub>2</sub>                                                                    | 22       | 25       | 34         | 45        | 75        |

## DIN

[illegible]

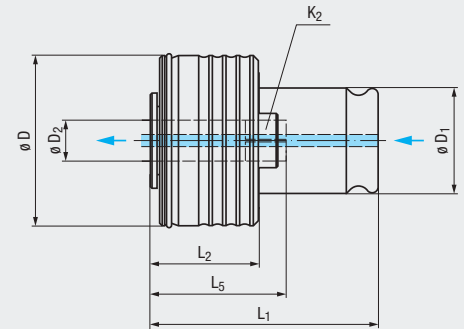
<sup>1)</sup> Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

2) Schnellwechsel-Einsätze mit erweitertem Spannbereich Typ EM-U-E zum Schneiden von Feingewinden MF siehe Seite 728  
Quick-change adapters with extended clamping range type EM-U-E for the cutting of fine threads MF. see page 728



## EM-U

## ISO

Mit Überlastkupplung  
With overload clutchp<sub>max</sub>  
50 bar  
(700 psi)Product  
FinderSoft-  
synchroSpeed-  
synchro

KSN

MQL  
MMS

SFB

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

| Typ · Type                                                                        | EM 00-U   | EM 01-U    | EM 03-U  | EM 04-U   | EM 05-U   |
|-----------------------------------------------------------------------------------|-----------|------------|----------|-----------|-----------|
|  | M2,2 - M9 | M3,5 - M14 | M6 - M24 | M14 - M42 | M24 - M48 |
| ø D                                                                               | 24        | 33         | 50       | 72        | 95        |
| ø D <sub>1</sub>                                                                  | 13        | 19         | 31       | 48        | 60        |
| L <sub>1</sub>                                                                    | 41,5      | 47         | 69       | 101       | 138       |
| L <sub>2</sub>                                                                    | 22        | 25         | 34       | 45        | 75        |

| ISO              |                |  |  |                |            |                |            |                |            |                |          |                |          |
|------------------|----------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------|------------|----------------|------------|----------------|------------|----------------|----------|----------------|----------|
| ø D <sub>2</sub> | K <sub>2</sub> |                                                                                    |                                                                                    | L <sub>5</sub> |            | L <sub>5</sub> |            | L <sub>5</sub> |            | L <sub>5</sub> |          | L <sub>5</sub> |          |
| 2,8              | 2,24           | M2,2 - M2,5                                                                        |                                                                                    |                | F0570202   | 21             |            |                |            |                |          |                |          |
| 3,15             | 2,5            | M3                                                                                 |                                                                                    |                | F0570203.1 | 21             |            |                |            |                |          |                |          |
| 3,15             | 2,5            |                                                                                    | M4                                                                                 |                | F0570203.2 | 21             |            |                |            |                |          |                |          |
| 3,55             | 2,8            | M3,5                                                                               |                                                                                    |                | F0570204.1 | 21             | F0571204.1 | 22             |            |                |          |                |          |
| 3,55             | 2,8            |                                                                                    | M4,5                                                                               |                | F0570204.2 | 21             | F0571204.2 | 22             |            |                |          |                |          |
| 4                | 3,15           | M4                                                                                 |                                                                                    |                | F0570205.1 | 22             | F0571205.1 | 23             |            |                |          |                |          |
| 4                | 3,15           |                                                                                    | M5                                                                                 |                | F0570205.2 | 22             | F0571205.2 | 23             |            |                |          |                |          |
| 4,5              | 3,55           | M4,5                                                                               |                                                                                    |                | F0570206.1 | 22             | F0571206.1 | 23             |            |                |          |                |          |
| 4,5              | 3,55           |                                                                                    | M6                                                                                 |                | F0570206.2 | 22             | F0571206.2 | 23             |            |                |          |                |          |
| 5                | 4              | M5                                                                                 |                                                                                    |                | F0570207   | 23             | F0571207   | 24             |            |                |          |                |          |
| 5,6              | 4,5            |                                                                                    | M7                                                                                 |                | F0570208   | 23             | F0571208   | 24             |            |                |          |                |          |
| 6,3              | 5              | M6                                                                                 |                                                                                    |                | F0570209.1 | 24             | F0571209.1 | 25             | F0573209.1 | 38             |          |                |          |
| 6,3              | 5              |                                                                                    | M8                                                                                 |                | F0570209.2 | 24             | F0571209.2 | 25             | F0573209.2 | 38             |          |                |          |
| 7,1              | 5,6            | M7                                                                                 | M9                                                                                 |                | F0570210   | 24             | F0571210   | 25             | F0573210   | 38             |          |                |          |
| 8                | 6,3            | M8                                                                                 | M10 - M11                                                                          |                | 2)         |                | F0571211   | 26             | F0573211   | 39             |          |                |          |
| 9                | 7,1            | M9                                                                                 | M12                                                                                |                |            |                | F0571212   | 27             | F0573212   | 40             |          |                |          |
| 10               | 8              | M10                                                                                |                                                                                    |                |            |                | F0571110   | 28             | F0573110   | 41             |          |                |          |
| 11,2             | 9              |                                                                                    | M14                                                                                |                |            |                | F0571214   | 29             | F0573214   | 42             | F0574214 | 56             |          |
| 12,5             | 10             |                                                                                    | M16                                                                                |                |            |                | 2)         |                | F0573215   | 43             | F0574215 | 57             |          |
| 14               | 11,2           |                                                                                    | M18 - M20                                                                          |                |            |                |            |                | F0573216   | 44             | F0574216 | 58             |          |
| 16               | 12,5           |                                                                                    | M22                                                                                |                |            |                |            |                | F0573217   | 46             | F0574217 | 60             |          |
| 18               | 14             |                                                                                    | M24                                                                                |                |            |                |            |                | F0573218   | 48             | F0574218 | 62             | F0575218 |
| 20               | 16             |                                                                                    | M27 - M30                                                                          |                |            |                | 2)         |                | F0574116   | 64             | F0575116 | 97             |          |
| 22,4             | 18             |                                                                                    | M33                                                                                |                |            |                | 2)         |                | F0574220   | 66             | F0575220 | 99             |          |
| 25               | 20             |                                                                                    | M36                                                                                |                |            |                |            |                | F0574118   | 67             | F0575118 | 100            |          |
| 28               | 22,4           |                                                                                    | M39 - M42                                                                          |                |            |                |            |                | F0574222   | 70             | F0575222 | 103            |          |
| 31,5             | 25             |                                                                                    | M45 - M48                                                                          |                |            |                |            |                | 2)         |                | F0575223 | 105            |          |
| 35,5             | 28             |                                                                                    | M52 - M56                                                                          |                |            |                |            |                | 2)         |                | 2)       |                |          |
| 40               | 31,5           |                                                                                    | M60 - M64                                                                          |                |            |                |            |                |            |                | 2)       |                |          |
| 45               | 35,5           |                                                                                    | M68                                                                                |                |            |                |            |                |            |                | 2)       |                |          |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

2) Schnellwechsel-Einsätze mit erweitertem Spannbereich Typ EM-U-E zum Schneiden von Feingewinden MF siehe Seite 728  
Quick-change adapters with extended clamping range type EM-U-E for the cutting of fine threads MF, see page 728



# EM-U-E

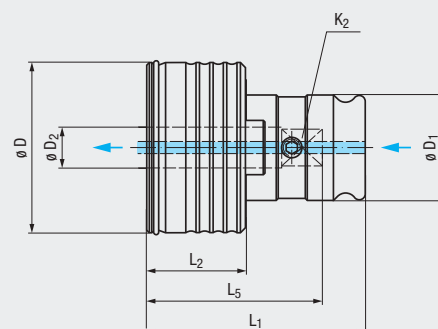
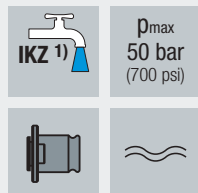
**DIN ISO**



**Zum Schneiden von Feingewinden**  
For the cutting of fine threads

**MF**

**Mit Überlastkupplung**  
With overload clutch



| Typ · Type       | EM 00-U-E | EM 01-U-E | EM 03-U-E | EM 04-U-E | EM 05-U-E |
|------------------|-----------|-----------|-----------|-----------|-----------|
| ø D              | 24        | 33        | 50        | 72        | 95        |
| ø D <sub>1</sub> | 13        | 19        | 31        | 48        | 60        |
| L <sub>1</sub>   | 38,5      | 44        | 64,5      | 96        | 125       |
| L <sub>2</sub>   | 19        | 22,5      | 29,5      | 40,5      | 62        |

| Feingewinde<br>Fine thread |                | <b>MF</b> |           | M8 - M11        |                | M16 |                 | M27 - M30 |                | M39 - M48       |                | M52 - M60       |                |
|----------------------------|----------------|-----------|-----------|-----------------|----------------|-----|-----------------|-----------|----------------|-----------------|----------------|-----------------|----------------|
| <b>DIN</b>                 |                |           |           |                 |                |     |                 |           |                |                 |                |                 |                |
| ø D <sub>2</sub>           | K <sub>2</sub> |           |           |                 | L <sub>5</sub> |     | L <sub>5</sub>  |           | L <sub>5</sub> |                 | L <sub>5</sub> |                 | L <sub>5</sub> |
| 8                          | 6,2            | M8        | M11       | <b>F0810108</b> | 28             |     | <b>F0811112</b> | 37        |                |                 |                |                 |                |
| 12                         | 9              |           | M16       |                 |                |     |                 |           | 50             |                 |                |                 |                |
| 20                         | 16             |           | M27       |                 |                |     |                 |           | 52             |                 |                |                 |                |
| 22                         | 18             |           | M30       |                 |                |     |                 |           |                |                 |                |                 |                |
| 32                         | 24             |           | M39 - M42 |                 |                |     |                 |           |                | <b>F0814120</b> | 66             |                 |                |
| 36                         | 29             |           | M45 - M48 |                 |                |     |                 |           |                | <b>F0814121</b> | 71             |                 |                |
| 40                         | 32             |           | M52 - M56 |                 |                |     |                 |           |                |                 |                | <b>F0815122</b> | 91             |
| 45                         | 35             |           | M60       |                 |                |     |                 |           |                |                 |                | <b>F0815123</b> | 94             |

| Feingewinde<br>Fine thread |                | <b>MF</b> |           | M8 - M11        |                | M16 |                 | M27 - M33 |                | M45 - M56       |                | M52 - M68       |                |
|----------------------------|----------------|-----------|-----------|-----------------|----------------|-----|-----------------|-----------|----------------|-----------------|----------------|-----------------|----------------|
| <b>ISO</b>                 |                |           |           |                 |                |     |                 |           |                |                 |                |                 |                |
| ø D <sub>2</sub>           | K <sub>2</sub> |           |           |                 | L <sub>5</sub> |     | L <sub>5</sub>  |           | L <sub>5</sub> |                 | L <sub>5</sub> |                 | L <sub>5</sub> |
| 8                          | 6,3            | M8        | M10 - M11 | <b>F0810211</b> | 28             |     | <b>F0811215</b> | 38        |                |                 |                |                 |                |
| 12,5                       | 10             |           | M16       |                 |                |     |                 |           | 50             |                 |                |                 |                |
| 20                         | 16             |           | M27 - M30 |                 |                |     |                 |           | 53             |                 |                |                 |                |
| 22,4                       | 18             |           | M33       |                 |                |     |                 |           |                |                 |                |                 |                |
| 31,5                       | 25             |           | M45 - M48 |                 |                |     |                 |           |                | <b>F0814223</b> | 69             |                 |                |
| 35,5                       | 28             |           | M52 - M56 |                 |                |     |                 |           |                | <b>F0814224</b> | 72             | <b>F0815224</b> | 96             |
| 40                         | 31,5           |           | M60 - M64 |                 |                |     |                 |           |                |                 |                | <b>F0815225</b> | 103            |
| 45                         | 35,5           |           | M68       |                 |                |     |                 |           |                |                 |                | <b>F0815226</b> | 107            |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply



## EM-U/IKZ

Für Gewindebohrer / Gewindeformer ohne innere Kühlschmierstoff-Zufuhr  
For taps / cold-forming taps without internal coolant supply

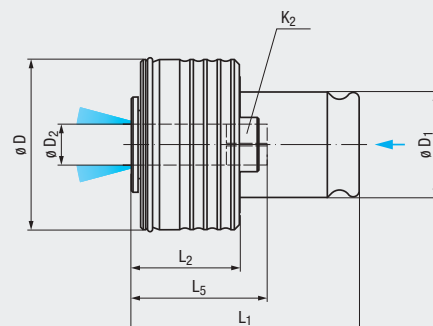
DIN

Mit Überlastkupplung  
With overload clutch



Entlang des Werkzeugschafts  
Along the tool shank

$p_{max}$   
50 bar  
(700 psi)



Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFL

SWITCH-MASTER

HF

EM

Zubehör  
Accessories

Typ · Type

 $\emptyset D$  $\emptyset D_1$  $L_1$  $L_2$ 

EM 01-U/IKZ

M3 - M14

EM 03-U/IKZ

M4,5 - M24

EM 04-U/IKZ

M14 - M36

EM 05-U/IKZ

M22 - M48

33

50

72

95

19

31

48

60

47

69

101

138

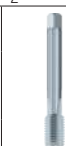
25

34

45

75

DIN

 $\emptyset D_2$  $K_2$  $L_5$  $L_5$  $L_5$  $L_5$ 

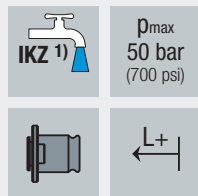
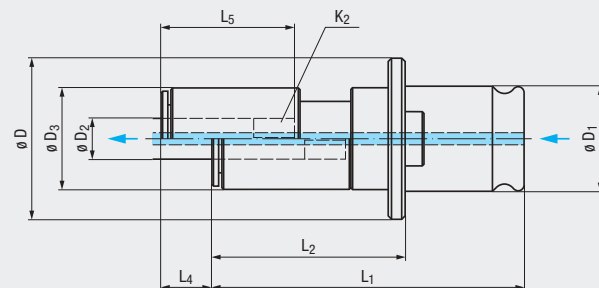
| $\emptyset D_2$ | $K_2$ |           |           |              |    |              |    |            |    |            |     |  |  |
|-----------------|-------|-----------|-----------|--------------|----|--------------|----|------------|----|------------|-----|--|--|
| 2,5             | 2,1   | M1 - M1,8 | M3,5      |              |    |              |    |            |    |            |     |  |  |
| 2,8             | 2,1   | M2 - M2,5 | M4        |              |    |              |    |            |    |            |     |  |  |
| 3,5             | 2,7   | M3        |           | F0571102.1.5 | 22 |              |    |            |    |            |     |  |  |
| 3,5             | 2,7   |           | M4,5 - M5 | F0571102.2.5 | 22 |              |    |            |    |            |     |  |  |
| 4               | 3     | M3,5      |           | F0571103.5   | 22 |              |    |            |    |            |     |  |  |
| 4,5             | 3,4   | M4        |           | F0571104.1.5 | 23 |              |    |            |    |            |     |  |  |
| 4,5             | 3,4   |           | M6        | F0571104.2.5 | 23 |              |    |            |    |            |     |  |  |
| 6               | 4,9   | M4,5 - M5 |           | F0571106.1.5 | 25 | F0573106.1.5 | 38 |            |    |            |     |  |  |
| 6               | 4,9   | M6        |           | F0571106.2.5 | 25 | F0573106.2.5 | 38 |            |    |            |     |  |  |
| 6               | 4,9   |           | M8        | F0571106.3.5 | 25 | F0573106.3.5 | 38 |            |    |            |     |  |  |
| 7               | 5,5   |           | M10       | F0571107.5   | 25 | F0573107.5   | 38 |            |    |            |     |  |  |
| 8               | 6,2   | M8        |           | F0571108.5   | 26 | F0573108.5   | 39 |            |    |            |     |  |  |
| 9               | 7     |           | M12       | F0571109.5   | 27 | F0573109.5   | 40 |            |    |            |     |  |  |
| 10              | 8     | M10       |           | F0571110.5   | 28 | F0573110.5   | 41 |            |    |            |     |  |  |
| 11              | 9     |           | M14       | F0571111.5   | 29 | F0573111.5   | 42 | F0574111.5 | 56 |            |     |  |  |
| 12              | 9     |           | M16       |              |    | F0573112.5   | 42 | F0574112.5 | 56 |            |     |  |  |
| 14              | 11    |           | M18       |              |    | F0573113.5   | 44 | F0574113.5 | 58 |            |     |  |  |
| 16              | 12    |           | M20       |              |    | F0573114.5   | 45 | F0574114.5 | 59 |            |     |  |  |
| 18              | 14,5  |           | M22 - M24 |              |    | F0573115.5   | 47 | F0574115.5 | 61 | F0575115.5 | 94  |  |  |
| 20              | 16    |           | M27       |              |    |              |    | F0574116.5 | 63 | F0575116.5 | 96  |  |  |
| 22              | 18    |           | M30       |              |    |              |    | F0574117.5 | 65 | F0575117.5 | 98  |  |  |
| 25              | 20    |           | M33       |              |    |              |    | F0574118.5 | 67 | F0575118.5 | 100 |  |  |
| 28              | 22    |           | M36       |              |    |              |    | F0574119.5 | 69 | F0575119.5 | 102 |  |  |
| 32              | 24    |           | M39 - M42 |              |    |              |    |            |    | F0575120.5 | 104 |  |  |
| 36              | 29    |           | M45 - M48 |              |    |              |    |            |    | F0575121.5 | 109 |  |  |



Mit Längennachstellung  
With length adjustment

# EM-L

## DIN



| Typ · Type                                                                        | EM 00-L  | EM 01-L  | EM 03-L    | EM 04-L   | EM 05-L   |
|-----------------------------------------------------------------------------------|----------|----------|------------|-----------|-----------|
|  | M1 - M10 | M3 - M14 | M4,5 - M24 | M14 - M36 | M22 - M48 |
| ø D                                                                               | 23       | 30       | 48         | 70        | 92        |
| ø D <sub>1</sub>                                                                  | 13       | 19       | 31         | 48        | 60        |
| ø D <sub>3</sub>                                                                  | 13       | 18       | 30         | 47        | 58        |
| L <sub>1</sub>                                                                    | 48       | 55       | 94         | 137       | 205       |
| L <sub>2</sub>                                                                    | 29       | 33       | 59         | 81        | 142       |
| L <sub>4</sub>                                                                    | 8        | 10       | 15         | 25        | 40        |

## DIN

| ø D <sub>2</sub> | K <sub>2</sub> |  |  |                   | L <sub>5</sub> |                   | L <sub>5</sub> |                   | L <sub>5</sub> |                   | L <sub>5</sub> |                   | L <sub>5</sub> |
|------------------|----------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|----------------|
| 2,5              | 2,1            | M1 - M1,8                                                                          | M3,5                                                                               | <b>F0580100.6</b> | 21             |                   |                |                   |                |                   |                |                   |                |
| 2,8              | 2,1            | M2 - M2,6                                                                          | M4                                                                                 | <b>F0580101.6</b> | 21             |                   |                |                   |                |                   |                |                   |                |
| 3,5              | 2,7            | M3                                                                                 | M4,5 - M5                                                                          | <b>F0580102.6</b> | 22             | <b>F0581102.6</b> | 23             |                   |                |                   |                |                   |                |
| 4                | 3              | M3,5                                                                               | M5,5                                                                               | <b>F0580103.6</b> | 22             | <b>F0581103.6</b> | 22             |                   |                |                   |                |                   |                |
| 4,5              | 3,4            | M4                                                                                 | M6                                                                                 | <b>F0580104.6</b> | 22             | <b>F0581104.6</b> | 23             |                   |                |                   |                |                   |                |
| 6                | 4,9            | M4,5 - M6                                                                          | M8                                                                                 | <b>F0580106.6</b> | 24             | <b>F0581106.6</b> | 25             | <b>F0583106.6</b> | 38             |                   |                |                   |                |
| 7                | 5,5            | M7                                                                                 | M9 - M10                                                                           | <b>F0580107.6</b> | 24             | <b>F0581107.6</b> | 25             | <b>F0583107.6</b> | 38             |                   |                |                   |                |
| 8                | 6,2            | M8                                                                                 | M11                                                                                | 2)                |                | <b>F0581108.6</b> | 26             | <b>F0583108.6</b> | 39             |                   |                |                   |                |
| 9                | 7              | M9                                                                                 | M12                                                                                |                   |                | <b>F0581109.6</b> | 27             | <b>F0583109.6</b> | 40             |                   |                |                   |                |
| 10               | 8              | M10                                                                                |                                                                                    |                   |                | <b>F0581110.6</b> | 28             | <b>F0583110.6</b> | 41             |                   |                |                   |                |
| 11               | 9              |                                                                                    | M14                                                                                |                   |                | <b>F0581111.6</b> | 29             | <b>F0583111.6</b> | 42             | <b>F0584111.6</b> | 55             |                   |                |
| 12               | 9              |                                                                                    | M16                                                                                |                   |                | 2)                |                | <b>F0583112.6</b> | 42             | <b>F0584112.6</b> | 55             |                   |                |
| 14               | 11             |                                                                                    | M18                                                                                |                   |                |                   |                | <b>F0583113.6</b> | 44             | <b>F0584113.6</b> | 57             |                   |                |
| 16               | 12             |                                                                                    | M20                                                                                |                   |                |                   |                | <b>F0583114.6</b> | 45             | <b>F0584114.6</b> | 58             |                   |                |
| 18               | 14,5           |                                                                                    | M22 - M24                                                                          |                   |                |                   |                | <b>F0583115.6</b> | 47             | <b>F0584115.6</b> | 60             | <b>F0585115.6</b> | 94             |
| 20               | 16             |                                                                                    | M27                                                                                |                   |                |                   |                | 2)                |                | <b>F0584116.6</b> | 62             | <b>F0585116.6</b> | 96             |
| 22               | 18             |                                                                                    | M30                                                                                |                   |                |                   |                | 2)                |                | <b>F0584117.6</b> | 64             | <b>F0585117.6</b> | 98             |
| 25               | 20             |                                                                                    | M33                                                                                |                   |                |                   |                |                   |                | <b>F0584118.6</b> | 66             | <b>F0585118.6</b> | 100            |
| 28               | 22             |                                                                                    | M36                                                                                |                   |                |                   |                |                   |                | <b>F0584119.6</b> | 68             | <b>F0585119.6</b> | 102            |
| 32               | 24             |                                                                                    | M39 - M42                                                                          |                   |                |                   |                |                   |                | 2)                |                | <b>F0585120.6</b> | 104            |
| 36               | 29             |                                                                                    | M45 - M48                                                                          |                   |                |                   |                |                   |                | 2)                |                | <b>F0585121.6</b> | 109            |
| 40               | 32             |                                                                                    | M52 - M56                                                                          |                   |                |                   |                |                   |                |                   |                | 2)                |                |
| 45               | 35             |                                                                                    | M60                                                                                |                   |                |                   |                |                   |                |                   |                | 2)                |                |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

Weitere Auskraglängen L<sub>2</sub> auf Anfrage  
Further projecting lengths L<sub>2</sub> upon request

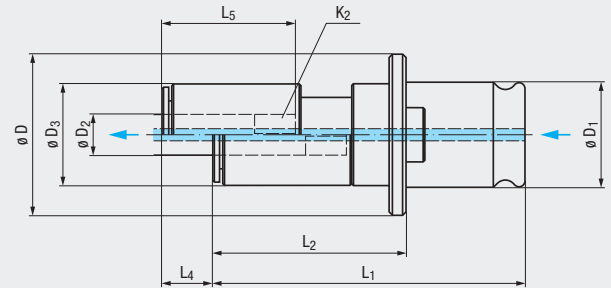
2) Schnellwechsel-Einsätze mit erweitertem Spannbereich Typ EM-L-E zum Schneiden von Feingewinden MF auf Anfrage  
Quick-change adapters with extended clamping range type EM-L-E for the cutting of fine threads MF upon request





EM-L

ISO

Mit Längennachstellung  
With length adjustment

$p_{max}$   
50 bar  
(700 psi)



L+

Product

Finder

Soft-

synchro

Speed-

synchro

KSN

MQL

MMS

SFB

SWITCH-

MASTER

HF

EM

Zubehör

Accessories



| Typ · Type                                                                        | EM 00-L | EM 01-L    | EM 03-L  | EM 04-L   | EM 05-L   |
|-----------------------------------------------------------------------------------|---------|------------|----------|-----------|-----------|
|  | M1 - M9 | M3,5 - M14 | M6 - M24 | M14 - M42 | M24 - M48 |
| $\varnothing D$                                                                   | 23      | 30         | 48       | 70        | 92        |
| $\varnothing D_1$                                                                 | 13      | 19         | 31       | 48        | 60        |
| $\varnothing D_3$                                                                 | 13      | 18         | 30       | 47        | 58        |
| $L_1$                                                                             | 48      | 55         | 94       | 137       | 205       |
| $L_2$                                                                             | 29      | 33         | 59       | 81        | 142       |
| $L_4$                                                                             | 8       | 10         | 15       | 25        | 40        |

| ISO               |       |                                                                                    |                                                                                    |            |       |            |       |            |       |            |       |            |       |
|-------------------|-------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|
| $\varnothing D_2$ | $K_2$ |  |  |            | $L_5$ |            | $L_5$ |            | $L_5$ |            | $L_5$ |            | $L_5$ |
| 2,24              | 1,8   |                                                                                    | M3                                                                                 | F0580200.6 | 20    |            |       |            |       |            |       |            |       |
| 2,5               | 2     | M1 - M2                                                                            | M3,5                                                                               | F0580201.6 | 20    |            |       |            |       |            |       |            |       |
| 2,8               | 2,24  | M2,2 - M2,6                                                                        |                                                                                    | F0580202.6 | 21    |            |       |            |       |            |       |            |       |
| 3,15              | 2,5   | M3                                                                                 | M4                                                                                 | F0580203.6 | 21    |            |       |            |       |            |       |            |       |
| 3,55              | 2,8   | M3,5                                                                               | M4,5                                                                               | F0580204.6 | 21    | F0581204.6 | 22    |            |       |            |       |            |       |
| 4                 | 3,15  | M4                                                                                 | M5                                                                                 | F0580205.6 | 22    | F0581205.6 | 23    |            |       |            |       |            |       |
| 4,5               | 3,55  | M4,5                                                                               | M6                                                                                 | F0580206.6 | 22    | F0581206.6 | 23    |            |       |            |       |            |       |
| 5                 | 4     | M5                                                                                 |                                                                                    | F0580207.6 | 23    | F0581207.6 | 24    |            |       |            |       |            |       |
| 5,6               | 4,5   |                                                                                    | M7                                                                                 | F0580208.6 | 23    | F0581208.6 | 24    |            |       |            |       |            |       |
| 6,3               | 5     | M6                                                                                 | M8                                                                                 | F0580209.6 | 24    | F0581209.6 | 25    | F0583209.6 | 38    |            |       |            |       |
| 7,1               | 5,6   | M7                                                                                 | M9                                                                                 | F0580210.6 | 24    | F0581210.6 | 25    | F0583210.6 | 38    |            |       |            |       |
| 8                 | 6,3   | M8                                                                                 | M10 - M11                                                                          | 2)         |       | F0581211.6 | 26    | F0583211.6 | 39    |            |       |            |       |
| 9                 | 7,1   | M9                                                                                 | M12                                                                                |            |       | F0581212.6 | 27    | F0583212.6 | 40    |            |       |            |       |
| 10                | 8     | M10                                                                                |                                                                                    |            |       | F0581211.6 | 28    | F0583110.6 | 41    |            |       |            |       |
| 11,2              | 9     |                                                                                    | M14                                                                                |            |       | F0581214.6 | 29    | F0583214.6 | 42    | F0584214.6 | 55    |            |       |
| 12,5              | 10    |                                                                                    | M16                                                                                |            |       | 2)         |       | F0583215.6 | 43    | F0584215.6 | 56    |            |       |
| 14                | 11,2  |                                                                                    | M18 - M20                                                                          |            |       |            |       | F0583216.6 | 44    | F0584216.6 | 57    |            |       |
| 16                | 12,5  |                                                                                    | M22                                                                                |            |       |            |       | F0583217.6 | 46    | F0584217.6 | 59    |            |       |
| 18                | 14    |                                                                                    | M24                                                                                |            |       |            |       | F0583218.6 | 48    | F0584218.6 | 61    | F0585218.6 | 95    |
| 20                | 16    |                                                                                    | M27 - M30                                                                          |            |       | 2)         |       | F0584116.6 | 63    | F0585116.6 | 97    |            |       |
| 22,4              | 18    |                                                                                    | M33                                                                                |            |       | 2)         |       | F0584220.6 | 65    | F0585220.6 | 99    |            |       |
| 25                | 20    |                                                                                    | M36                                                                                |            |       |            |       | F0584118.6 | 67    | F0585118.6 | 101   |            |       |
| 28                | 22,4  |                                                                                    | M39 - M42                                                                          |            |       |            |       | F0584222.6 | 69    | F0585222.6 | 103   |            |       |
| 31,5              | 25    |                                                                                    | M45 - M48                                                                          |            |       |            |       | 2)         |       | F0585223.6 | 105   |            |       |
| 35,5              | 28    |                                                                                    | M52 - M56                                                                          |            |       |            |       | 2)         |       | 2)         |       |            |       |
| 40                | 31,5  |                                                                                    | M60 - M64                                                                          |            |       |            |       |            |       | 2)         |       |            |       |
| 45                | 35,5  |                                                                                    | M68                                                                                |            |       |            |       |            |       | 2)         |       |            |       |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

2) Schnellwechsel-Einsätze mit erweitertem Spannbereich Typ EM-L-E zum Schneiden von Feingewinden MF auf Anfrage  
Quick-change adapters with extended clamping range type EM-L-E for the cutting of fine threads MF upon request

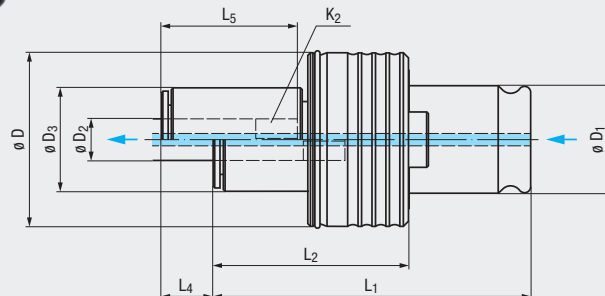
Weitere Auskraglängen  $L_2$  auf Anfrage  
Further projecting lengths  $L_2$  upon request



# EM-UL

## DIN

Mit Längennachstellung, mit Überlastkupplung  
With length adjustment, with overload clutch



| Typ · Type                                                                        | EM 00-UL | EM 01-UL | EM 03-UL   | EM 04-UL  | EM 05-UL  |
|-----------------------------------------------------------------------------------|----------|----------|------------|-----------|-----------|
|  | M1 - M10 | M3 - M14 | M4,5 - M24 | M14 - M36 | M22 - M48 |
| ø D                                                                               | 24       | 33       | 50         | 72        | 95        |
| ø D <sub>1</sub>                                                                  | 13       | 19       | 31         | 48        | 60        |
| ø D <sub>3</sub>                                                                  | 13       | 18       | 30         | 47        | 58        |
| L <sub>1</sub>                                                                    | 49       | 55       | 94         | 137       | 205       |
| L <sub>2</sub>                                                                    | 29       | 33       | 59         | 81        | 142       |
| L <sub>4</sub>                                                                    | 8        | 10       | 15         | 25        | 40        |



## DIN

| ø D <sub>2</sub> | K <sub>2</sub> |  |  |                     | L <sub>5</sub> |                     | L <sub>5</sub> |                     | L <sub>5</sub> |                   | L <sub>5</sub>    |
|------------------|----------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------|----------------|---------------------|----------------|---------------------|----------------|-------------------|-------------------|
| 2,5              | 2,1            | M1 - M1,8                                                                          |                                                                                    | <b>F0590100.1.6</b> | 21             |                     |                |                     |                |                   |                   |
| 2,5              | 2,1            |                                                                                    | M3,5                                                                               | <b>F0590100.2.6</b> | 21             |                     |                |                     |                |                   |                   |
| 2,8              | 2,1            | M2                                                                                 |                                                                                    | <b>F0590101.1.6</b> | 21             |                     |                |                     |                |                   |                   |
| 2,8              | 2,1            | M2,5                                                                               |                                                                                    | <b>F0590101.2.6</b> | 21             |                     |                |                     |                |                   |                   |
| 2,8              | 2,1            |                                                                                    | M4                                                                                 | <b>F0590101.3.6</b> | 21             |                     |                |                     |                |                   |                   |
| 3,5              | 2,7            | M3                                                                                 |                                                                                    | <b>F0590102.1.6</b> | 22             | <b>F0591102.1.6</b> | 23             |                     |                |                   |                   |
| 3,5              | 2,7            |                                                                                    | M4,5 - M5                                                                          | <b>F0590102.2.6</b> | 22             | <b>F0591102.2.6</b> | 23             |                     |                |                   |                   |
| 4                | 3              | M3,5                                                                               |                                                                                    | <b>F0590103.6</b>   | 22             | <b>F0591103.6</b>   | 22             |                     |                |                   |                   |
| 4,5              | 3,4            | M4                                                                                 |                                                                                    | <b>F0590104.1.6</b> | 22             | <b>F0591104.1.6</b> | 23             |                     |                |                   |                   |
| 4,5              | 3,4            |                                                                                    | M6                                                                                 | <b>F0590104.2.6</b> | 22             | <b>F0591104.2.6</b> | 23             |                     |                |                   |                   |
| 6                | 4,9            | M4,5 - M5                                                                          |                                                                                    | <b>F0590106.1.6</b> | 24             | <b>F0591106.1.6</b> | 25             | <b>F0593106.1.6</b> | 38             |                   |                   |
| 6                | 4,9            | M6                                                                                 |                                                                                    | <b>F0590106.2.6</b> | 24             | <b>F0591106.2.6</b> | 25             | <b>F0593106.2.6</b> | 38             |                   |                   |
| 6                | 4,9            |                                                                                    | M8                                                                                 | <b>F0590106.3.6</b> | 24             | <b>F0591106.3.6</b> | 25             | <b>F0593106.3.6</b> | 38             |                   |                   |
| 7                | 5,5            |                                                                                    | M10                                                                                | <b>F0590107.6</b>   | 24             | <b>F0591107.6</b>   | 25             | <b>F0593107.6</b>   | 38             |                   |                   |
| 8                | 6,2            | M8                                                                                 |                                                                                    | 2)                  |                | <b>F0591108.6</b>   | 26             | <b>F0593108.6</b>   | 39             |                   |                   |
| 9                | 7              |                                                                                    | M12                                                                                |                     |                | <b>F0591109.6</b>   | 27             | <b>F0593109.6</b>   | 40             |                   |                   |
| 10               | 8              | M10                                                                                |                                                                                    |                     |                | <b>F0591110.6</b>   | 28             | <b>F0593110.6</b>   | 41             |                   |                   |
| 11               | 9              |                                                                                    | M14                                                                                |                     |                | <b>F0591111.6</b>   | 29             | <b>F0593111.6</b>   | 42             | <b>F0594111.6</b> | 55                |
| 12               | 9              |                                                                                    | M16                                                                                |                     |                | 2)                  |                | <b>F0593112.6</b>   | 42             | <b>F0594112.6</b> | 55                |
| 14               | 11             |                                                                                    | M18                                                                                |                     |                |                     |                | <b>F0593113.6</b>   | 44             | <b>F0594113.6</b> | 57                |
| 16               | 12             |                                                                                    | M20                                                                                |                     |                |                     |                | <b>F0593114.6</b>   | 45             | <b>F0594114.6</b> | 58                |
| 18               | 14,5           |                                                                                    | M22 - M24                                                                          |                     |                |                     |                | <b>F0593115.6</b>   | 47             | <b>F0594115.6</b> | 60                |
| 20               | 16             |                                                                                    | M27                                                                                |                     |                |                     |                | 2)                  |                | <b>F0594116.6</b> | 62                |
| 22               | 18             |                                                                                    | M30                                                                                |                     |                |                     |                | 2)                  |                | <b>F0594117.6</b> | 64                |
| 25               | 20             |                                                                                    | M33                                                                                |                     |                |                     |                |                     |                | <b>F0594118.6</b> | 66                |
| 28               | 22             |                                                                                    | M36                                                                                |                     |                |                     |                |                     |                | <b>F0594119.6</b> | 68                |
| 32               | 24             |                                                                                    | M39 - M42                                                                          |                     |                |                     |                |                     |                | 2)                | <b>F0595120.6</b> |
| 36               | 29             |                                                                                    | M45 - M48                                                                          |                     |                |                     |                |                     |                | 2)                | <b>F0595121.6</b> |
| 40               | 32             |                                                                                    | M60 - M64                                                                          |                     |                |                     |                |                     |                |                   | 2)                |
| 45               | 35             |                                                                                    | M68                                                                                |                     |                |                     |                |                     |                |                   | 2)                |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

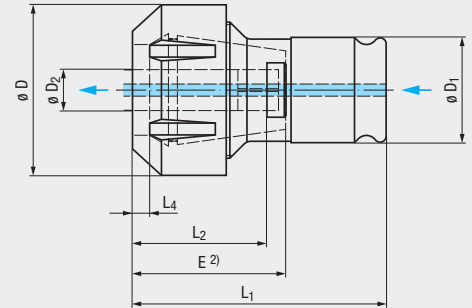
Weitere Auskraglängen L<sub>2</sub> auf Anfrage  
Further projecting lengths L<sub>2</sub> upon request

2) Schnellwechsel-Einsätze mit erweitertem Spannbereich Typ EM-UL-E zum Schneiden von Feingewinden MF auf Anfrage  
Quick-change adapters with extended clamping range type EM-UL-E for the cutting of fine threads MF upon request

Ausführungen für Gewindebohrer / Gewindeformer mit ISO-Baumaßen auf Anfrage erhältlich  
Versions for taps / cold-forming taps with ISO dimensions are available on request



## EM-Z/ER/IKZ



$p_{\max}$   
50 bar  
(700 psi)



| Typ<br>Type                |  | $\varnothing D_2$ |  |  | $\varnothing D$ | $\varnothing D_1$ | $L_1$ | $L_2$ | $L_4$ |  |
|----------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------|-------------------|-------|-------|-------|-------------------------------------------------------------------------------------|
| <b>EM 00-Z/<br/>ER/IKZ</b> | M2 - M8<br>(Nr.2 - 5/16)                                                          | 2,5 - 7           | ER 11 (GB)                                                                        | Hi-Q/ER<br>11                                                                     | 19              | 13                | 40,5  | 21    | 0,9   | <b>F0860001</b>                                                                     |
| <b>EM 01-Z/<br/>ER/IKZ</b> | M4 - M12<br>(Nr.8 - 7/16)                                                         | 4,5 - 10          | ER 20 (GB)                                                                        | Hi-Q/ERC<br>20                                                                    | 34              | 19                | 56    | 34,5  | 5     | <b>F0861001.13</b>                                                                  |
| <b>EM 03-Z/<br/>ER/IKZ</b> | M4 - M20<br>(Nr.8 - 3/4)                                                          | 4,5 - 16          | ER 32 (GB)                                                                        | Hi-Q/ERC<br>32                                                                    | 50              | 31                | 76,3  | 41,5  | 5     | <b>F0863001.13</b>                                                                  |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

2) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

**EM00-Z/ER/IKZ:**

Spannmutter ohne integrierte Abdichtung ist im Lieferumfang enthalten  
Clamping nut without integrated seal is included in the delivery

**EM01-Z/ER/IKZ, EM03-Z/ER/IKZ:**

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

**Zubehör**

## Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und Kühlschleiben Typ KS/ER  
Sealing disks type DS/ER and coolant flush disks type KS/ER

» 750



Aufnahmekopf AEU  
Adapter head AEU

» 760



Spannmutter mit integrierter Abdichtung Typ Hi-Q/ERC 11  
Clamping nut with integrated seal, type Hi-Q/ERC 11

» 751

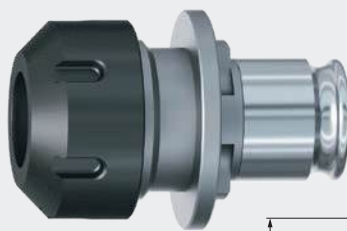


Spannschlüssel  
Clamping wrench

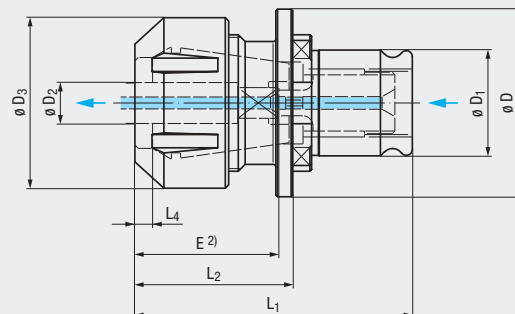
» 758



# EM-Z/QuickLock



$p_{max}$   
50 bar  
(700 psi)



| Typ<br>Type                   |            | $\varnothing D_2$ |            |             | $\varnothing D$ | $\varnothing D_1$ | $\varnothing D_3$ | $L_1$ | $L_2$ | $L_4$ |                                                                                     |
|-------------------------------|------------|-------------------|------------|-------------|-----------------|-------------------|-------------------|-------|-------|-------|-------------------------------------------------------------------------------------|
| <b>EM 01-Z/<br/>QuickLock</b> | M4,5 - M10 | 6 / 7             | ER 20 (GB) | Hi-Q/ERC 20 | 39              | 19                | 34                | 61    | 39,5  | 5     |  |
|                               | M8 - M12   | 8 / 9             |            |             | 39              | 19                | 34                | 61    | 39,5  | 5     |                                                                                     |
|                               | M10        | 10                |            |             | 39              | 19                | 34                | 61    | 39,5  | 5     |                                                                                     |
| <b>EM 03-Z/<br/>QuickLock</b> | M8 - M12   | 8 / 9             | ER 32 (GB) | Hi-Q/ERC 32 | 55              | 31                | 50                | 81,5  | 46,5  | 5     |                                                                                     |
|                               | M10 - M16  | 10 - 12           |            |             | 55              | 31                | 50                | 81,5  | 46,5  | 5     |                                                                                     |
|                               | M18 - M20  | 14 - 16           |            |             | 55              | 31                | 50                | 81,5  | 46,5  | 5     |                                                                                     |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

Weitere Ausführungen auf Anfrage  
Further designs upon request

2) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

Längeneinstellschraube sowie Spannmutter für Dichtscheiben sind im Lieferumfang enthalten  
Length adjustment screw as well as clamping nut for sealing disks are included in the delivery

Großer Griffing – in Kombination mit Softsynchro® QuickLock – ermöglicht stirnseitige Abdichtung  
Large ring handle – combined with Softsynchro® Quicklock – enables face sealing

## Zubehör Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und Kühlschcheiben Typ KS/ER  
Sealing disks type DS/ER and coolant flush disks type KS/ER

» 750



Aufnahmekopf AEU  
Adapter head AEU

» 760



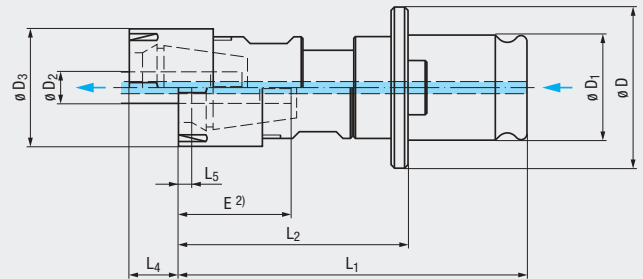
Spannschlüssel  
Clamping wrench

» 758

## EM-L/ER/IKZ

Mit Längennachstellung  
With length adjustment

$p_{\max}$   
50 bar  
(700 psi)



| Typ<br>Type                |  | $\varnothing D_2$ |  |  | $\varnothing D$ | $\varnothing D_1$ | $\varnothing D_3$ | $L_1$ | $L_2$ | $L_4$ | $L_5$ |  |
|----------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------|-------------------|-------------------|-------|-------|-------|-------|-------------------------------------------------------------------------------------|
| <b>EM 00-L/<br/>ER/IKZ</b> | M2 - M8<br>(Nr.2 - 5/16)                                                          | 2,5 - 7           | ER 11 (GB)                                                                        | Hi-Q/ERM<br>11                                                                    | 23              | 13                | 16                | 57,5  | 38    | 8     | 0,9   | <b>F3500011</b>                                                                     |
| <b>EM 01-L/<br/>ER/IKZ</b> | M4 - M12<br>(Nr.8 - 7/16)                                                         | 4,5 - 10          | ER 20 (GB)                                                                        | Hi-Q/ERMC<br>16                                                                   | 30              | 19                | 22                | 72    | 50,5  | 10    | 5     | <b>F3501016</b>                                                                     |
| <b>EM 03-L/<br/>ER/IKZ</b> | M4 - M20<br>(Nr.8 - 3/4)                                                          | 4,5 - 16          | ER 25 (GB)                                                                        | Hi-Q/ERMC<br>25                                                                   | 48              | 31                | 35                | 103   | 68    | 15    | 5     | <b>F3503025</b>                                                                     |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

2) Einstecktiefen E siehe Seite 754  
Clamping depths E, see page 754

**EM00-L/ER/IKZ:**

Spannmutter ohne integrierte Abdichtung ist im Lieferumfang enthalten  
Clamping nut without integrated seal is included in the delivery

**EM01-L/ER/IKZ, EM03-L/ER/IKZ:**

Spannmutter für Dichtscheiben ist im Lieferumfang enthalten  
Clamping nut for sealing disks is included in the delivery

**Zubehör**

## Accessories



Spannzangen Typ ER (GB)  
Collets type ER (GB)

» 746 - 747



Dichtscheiben Typ DS/ER und Kühlschleiben Typ KS/ER  
Sealing disks type DS/ER and coolant flush disks type KS/ER

» 750



Aufnahmekopf AEU  
Adapter head AEU

» 760



Spannmutter mit integrierter Abdichtung Typ Hi-Q/ERMC 11  
Clamping nut with integrated seal, type Hi-Q/ERMC 11

» 752



Spannschlüsselsatz  
Set of clamping wrenches

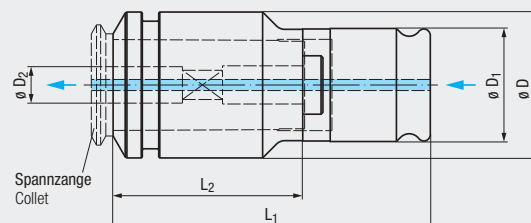
» 758



# EM/PGR/IKZ



$p_{max}$   
50 bar  
(700 psi)



| Typ<br>Type          |  | $\varnothing D_2$ |  | $\varnothing D$ | $\varnothing D_1$ | $L_1$ | $L_2$ |  |
|----------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-----------------|-------------------|-------|-------|-------------------------------------------------------------------------------------|
| <b>EM 01/PGR/IKZ</b> | M4 - M12<br>(Nr.8 - 7/16)                                                         | 4,5 - 10          | PGR 15 (GB)                                                                       | 24              | 19                | 64    | 42    | <b>F3561015</b>                                                                     |
| <b>EM 03/PGR/IKZ</b> | M8 - M20<br>(5/16 - 3/4)                                                          | 8 - 16            | PGR 25 (GB)                                                                       | 40              | 31                | 87    | 52    | <b>F3563025</b>                                                                     |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr  
If used with taps / cold-forming taps with internal coolant supply

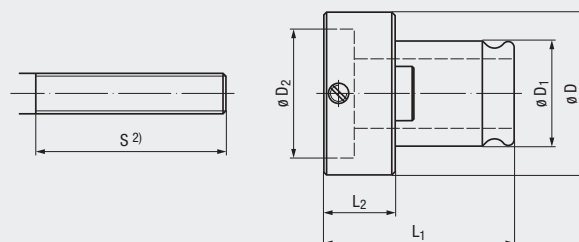
## Zubehör Accessories



Spannzangen Typ PGR-GB  
Collets type PGR-GB

» 749

## EM-SE

Product  
FinderSoft-  
synchroSpeed-  
synchro

KSN

MQL  
MMS

SFI

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

| Typ<br>Type |  |                 |     |                  |                        |                  |                |                |  |
|-------------|-----------------------------------------------------------------------------------|-----------------|-----|------------------|------------------------|------------------|----------------|----------------|-------------------------------------------------------------------------------------|
|             | ø d <sub>2</sub> x h <sub>1</sub>                                                 |                 | ø D | ø D <sub>1</sub> | S <sup>2)</sup>        | ø D <sub>2</sub> | L <sub>1</sub> | L <sub>2</sub> |                                                                                     |
| EM 01-SE    | 16 x 5                                                                            | M1 - M4         | 30  | 19               | 36                     | 16               | 36,5           | 15             | F0621600                                                                            |
|             | 20 x 5                                                                            | M3 - M4         | 30  | 19               | 36                     | 20               | 36,5           | 15             | F0621601                                                                            |
|             | 20 x 7                                                                            | M4,5 - M6       | 30  | 19               | 38                     | 20               | 38,5           | 17             | F0621602                                                                            |
|             | 25 x 9                                                                            | M7 - M9         | 35  | 19               | 40                     | 25               | 40,5           | 19             | F0621603                                                                            |
|             | 30 x 11                                                                           | M10 - M11       | 40  | 19               | 42                     | 30               | 42             | 20,5           | F0621604                                                                            |
|             | 38 x 10                                                                           | M12x1 - M15x1,5 | 48  | 19               | 41 (M12); 10 (M14-M15) | 38               | 41             | 19,5           | F0621605                                                                            |
|             | 38 x 14                                                                           | M12 - M14       | 48  | 19               | 45 (M12); 14 (M14)     | 38               | 45             | 23,5           | F0621606                                                                            |
| EM 03-SE    | 20 x 5                                                                            | M3 - M4         | 40  | 31               | 55                     | 20               | 55             | 20             | F0623601                                                                            |
|             | 20 x 7                                                                            | M4,5 - M6       | 40  | 31               | 56                     | 20               | 56,5           | 21,5           | F0623602                                                                            |
|             | 25 x 9                                                                            | M7 - M9         | 40  | 31               | 58                     | 25               | 58,5           | 23,5           | F0623603                                                                            |
|             | 30 x 11                                                                           | M10 - M11       | 40  | 31               | 60                     | 30               | 60             | 25             | F0623604                                                                            |
|             | 38 x 10                                                                           | M12x1 - M15x1,5 | 48  | 31               | 56                     | 38               | 56             | 21             | F0623605                                                                            |
|             | 38 x 14                                                                           | M12 - M14       | 48  | 31               | 60                     | 38               | 60             | 25             | F0623606                                                                            |
|             | 45 x 14                                                                           | M16x1 - M20x2   | 57  | 31               | 60                     | 45               | 60             | 25             | F0623607                                                                            |
|             | 45 x 18                                                                           | M16 - M20       | 57  | 31               | 64                     | 45               | 64             | 29             | F0623608                                                                            |
| EM 04-SE    | 30 x 11                                                                           | M10 - M11       | 60  | 48               | 84                     | 30               | 85             | 29             | F0624604                                                                            |
|             | 38 x 10                                                                           | M12x1 - M15x1,5 | 60  | 48               | 83                     | 38               | 84             | 28             | F0624605                                                                            |
|             | 38 x 14                                                                           | M12 - M14       | 60  | 48               | 87                     | 38               | 88             | 32             | F0624606                                                                            |
|             | 45 x 14                                                                           | M16x1 - M20x2   | 60  | 48               | 87                     | 45               | 88             | 32             | F0624607                                                                            |
|             | 45 x 18                                                                           | M16 - M20       | 60  | 48               | 91                     | 45               | 92             | 36             | F0624608                                                                            |
|             | 55 x 16                                                                           | M22x1 - M26x1,5 | 72  | 48               | 85                     | 55               | 86             | 30             | F0624609                                                                            |
|             | 55 x 22                                                                           | M22 - M24       | 72  | 48               | 90                     | 55               | 91             | 35             | F0624610                                                                            |
|             | 65 x 18                                                                           | M27x1 - M36x2   | 82  | 48               | 87                     | 65               | 88             | 32             | F0624611                                                                            |
|             | 65 x 25                                                                           | M27 - M36       | 82  | 48               | 93                     | 65               | 94             | 38             | F0624612                                                                            |

<sup>2)</sup> Max. zu schneidende Gewindelänge  
Max. thread length to be cut

Weitere Größen auf Anfrage  
Further sizes upon request





Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

HF

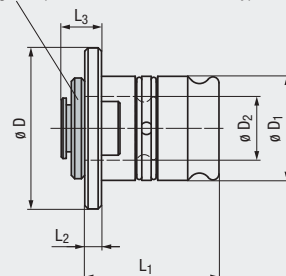
EM

Zubehör  
Accessories

# EM-R



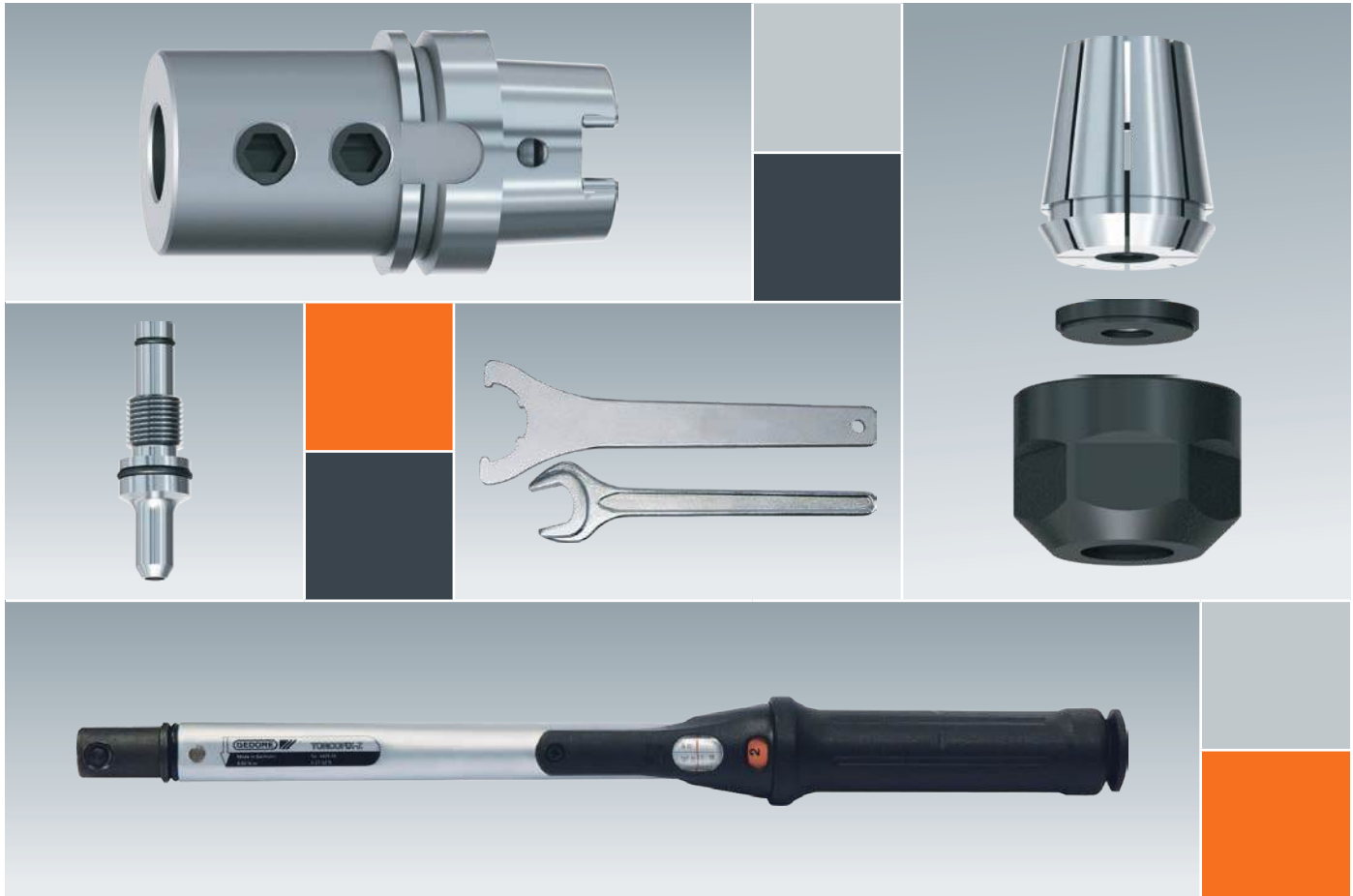
Eingesetzter Schnellwechsel-Einsatz Typ EM  
Quick-change adapter in assembled condition type EM



| Typ<br>Type       |  | ø D | ø D <sub>1</sub> | ø D <sub>2</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>3</sub> <sup>1)</sup> |  |
|-------------------|-----------------------------------------------------------------------------------|-----|------------------|------------------|----------------|----------------|------------------------------|-------------------------------------------------------------------------------------|
| <b>EM 01/00-R</b> | EM 00                                                                             | 30  | 19               | 13               | 25,5           | 4              | 11                           | <b>F0891000</b>                                                                     |
| <b>EM 03/00-R</b> | EM 00                                                                             | 48  | 31               | 13               | 40             | 5              | 12                           | <b>F0893000</b>                                                                     |
| <b>EM 03/01-R</b> | EM 01                                                                             | 48  | 31               | 19               | 40             | 5              | 12                           | <b>F0893001</b>                                                                     |
| <b>EM 04/01-R</b> | EM 01                                                                             | 70  | 48               | 19               | 61,5           | 6              | 13                           | <b>F0894001</b>                                                                     |
| <b>EM 04/03-R</b> | EM 03                                                                             | 70  | 48               | 31               | 61,5           | 6              | 16                           | <b>F0894003</b>                                                                     |
| <b>EM 05/03-R</b> | EM 03                                                                             | 92  | 60               | 31               | 76             | 13             | 23                           | <b>F0895003</b>                                                                     |
| <b>EM 05/04-R</b> | EM 04                                                                             | 92  | 60               | 48               | 76             | 13             | 24                           | <b>F0895004</b>                                                                     |

<sup>1)</sup> Bei Verwendung von Schnellwechsel-Einsätzen Typ EM  
If used with quick-change adapters type EM

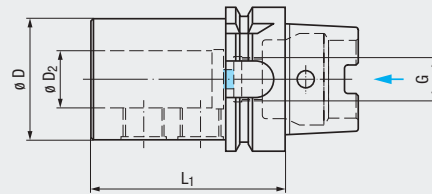




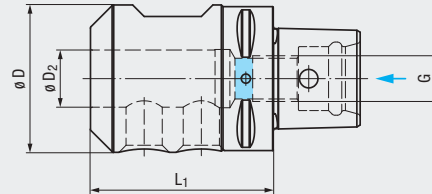
## Zubehör für Aufnahmen und Gewindeschneidapparate Accessories for Tap Holders and Tapping Attachments



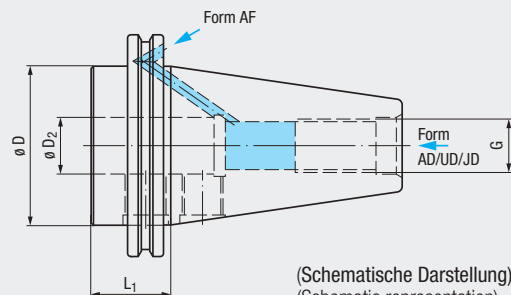
### HSK-A



### PSC



### SK/BT



| Typ<br>Type    | Form<br>Form | Schaftgröße<br>Shank size | $\varnothing D_2$ | $\varnothing D$ | G         | $L_1$ |            |
|----------------|--------------|---------------------------|-------------------|-----------------|-----------|-------|------------|
| DIN 69893-1    | A 1)         | HSK-A40                   | 20                | 52              | M12 x 1   | 75    | F33000C.02 |
|                |              | HSK-A40                   | 25                | 65              | M12 x 1   | 105   | F33000C.03 |
|                |              | HSK-A50                   | 20                | 52              | M16 x 1   | 80    | F33000C.04 |
|                |              | HSK-A50                   | 25                | 65              | M16 x 1   | 107   | F33000C.05 |
|                |              | HSK-A50                   | 32                | 77              | M16 x 1   | 114   | F33000C.06 |
|                |              | HSK-A63                   | 25                | 53              | M18 x 1   | 85    | F33000C.07 |
|                |              | HSK-A63                   | 32                | 72              | M18 x 1   | 110   | F33000C.08 |
|                |              | HSK-A80                   | 25                | 65              | M20 x 1,5 | 90    | F33000C.09 |
|                |              | HSK-A80                   | 32                | 72              | M20 x 1,5 | 110   | F33000C.10 |
|                |              | HSK-A100                  | 25                | 65              | M24 x 1,5 | 100   | F33000C.11 |
|                |              | HSK-A100                  | 32                | 72              | M24 x 1,5 | 96    | F33000C.12 |
| ISO 26623-1    |              | PSC 50                    | 25                | 64,5            | M16 x 1,5 | 80    | F10757410  |
|                |              | PSC 63                    | 25                | 64,5            | M20 x 2   | 80    | F10757411  |
|                |              | PSC 80                    | 25                | 64,5            | M20 x 2   | 80    | F10757412  |
|                |              | PSC 80                    | 32                | 71,5            | M20 x 2   | 80    | F10757413  |
| DIN ISO 7388-1 | AD 1)        | SK 40                     | 25                | 45              | M16       | 35    | F10712542  |
|                |              | SK 50                     | 25                | 70              | M24       | 35    | F10713208  |
|                |              | SK 50                     | 32                | 70              | M24       | 35    | F10711304  |
|                | AF 1)        | SK 40                     | 25                | 45              | M16       | 35    | F10715344  |
|                |              | SK 50                     | 25                | 70              | M24       | 35    | F10715299  |
|                |              | SK 50                     | 32                | 70              | M24       | 35    | F10715090  |
|                | UD           | SK 40                     | 25                | 45              | M16       | 35    | F10706396  |
|                |              | SK 50                     | 25                | 70              | M24       | 35    | F10717228  |
|                |              | SK 50                     | 32                | 70              | M24       | 35    | F10717279  |
| DIN 2080-1     | AD           | SK 30                     | 20                | 36              | M12       | 34    | F330005.03 |
|                |              | SK 40                     | 25                | 44              | M16       | 22    | F330005.01 |
|                |              | SK 50                     | 25                | 70              | M24       | 16    | F330005.02 |
|                |              | SK 50                     | 32                | 70              | M24       | 16    | F330005.04 |
| ASME B5.50 UNC | AD           | SK 40                     | 25                | 44,5            | 5/8 - 11  | 35    | F330007.03 |
|                |              | SK 50                     | 25                | 70              | 1" - 8    | 35    | F330007.04 |
|                |              | SK 50                     | 32                | 70              | 1" - 8    | 35    | F330007.05 |
| DIN ISO 7388-2 | JD           | BT 30                     | 20                | 36              | M12       | 35    | F10708223  |
|                |              | BT 40                     | 25                | 45              | M16       | 35    | F10717190  |
|                |              | BT 50                     | 25                | 70              | M24       | 44    | F10719213  |
|                |              | BT 50                     | 32                | 70              | M24       | 44    | F10729843  |



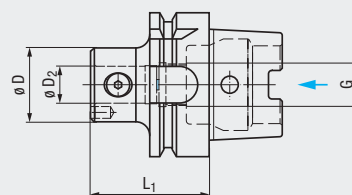
1) Mit Bohrung für Datenträger DIN 69873  
With bore for data chip according to DIN 69873

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannschrauben sind im Lieferumfang enthalten  
The locking screws are included in the delivery



## HSK-A



| Typ<br>Type               | Schaftgröße<br>Shank size | $\varnothing D_2$ | $\varnothing D$ | G         | $L_1$ |            |
|---------------------------|---------------------------|-------------------|-----------------|-----------|-------|------------|
| DIN 69893-1 <sup>1)</sup> | HSK-A63                   | 16                | ABS 32          | M18 x 1   | 50    | F33000C.48 |
|                           | HSK-A100                  | 16                | ABS 32          | M24 x 1,5 | 60    | F33000C.50 |

<sup>1)</sup> Mit Bohrung für Datenträger DIN 69873  
With bore for data chip according to DIN 69873

Weitere Ausführungen auf Anfrage  
Further designs upon request

Spannschraube ist im Lieferumfang enthalten  
The locking screw is included in the delivery

### Zubehör

#### Accessories

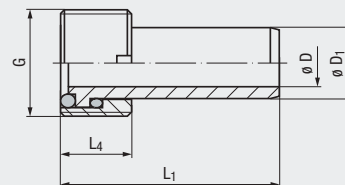


Kühlschmierstoffrohre, Füllstücke und Schlüssel  
Coolant tubes, adapters and wrenches

» 742 - 743



### Kühlschmierstoffrohre Coolant tubes



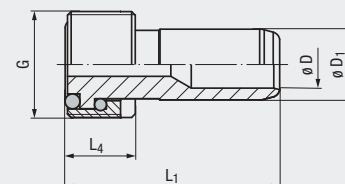
DIN 69895

| Für Schaftgröße<br>For shank size | ø D | ø D <sub>1</sub> | L <sub>4</sub> | L <sub>1</sub> | G         |            |
|-----------------------------------|-----|------------------|----------------|----------------|-----------|------------|
| HSK-A40                           | 5   | 8                | 8              | 29,5           | M12 x 1   | F330049.02 |
| HSK-A50                           | 6,4 | 10               | 10             | 33             | M16 x 1   | F330049.03 |
| HSK-A63                           | 8   | 12               | 12             | 36,5           | M18 x 1   | F330049.04 |
| HSK-A80                           | 10  | 14               | 14             | 40             | M20 x 1,5 | F330049.05 |
| HSK-A100                          | 12  | 16               | 16             | 44             | M24 x 1,5 | F330049.06 |

### Kühlschmierstoffrohre Coolant tubes



MQL  
1



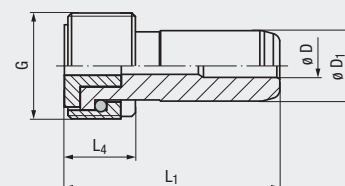
DIN 69090-4

| Für Schaftgröße<br>For shank size | ø D | ø D <sub>1</sub> | L <sub>4</sub> | L <sub>1</sub> | G         |            |
|-----------------------------------|-----|------------------|----------------|----------------|-----------|------------|
| HSK-A40                           | 5   | 8                | 8              | 29,5           | M12 x 1   | F355149.13 |
| HSK-A63                           | 8   | 12               | 12             | 36,5           | M18 x 1   | F355149.03 |
| HSK-A100                          | 12  | 16               | 16             | 44             | M24 x 1,5 | F355149.06 |

### Kühlschmierstoffrohre Coolant tubes



MQL  
2

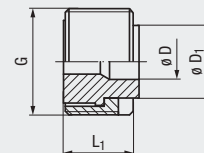


DIN 69090-4

| Type                                                    | Für Schaftgröße<br>For shank size | ø D | ø D <sub>1</sub> | L <sub>4</sub> | L <sub>1</sub> | G         |            |
|---------------------------------------------------------|-----------------------------------|-----|------------------|----------------|----------------|-----------|------------|
| Softsynchro® 1 Modular/MQL<br>Speedsynchro® Modular/MQL | HSK-A40                           | 4   | 8                | 8              | 29,5           | M12 x 1   | F355149.11 |
|                                                         | HSK-A63                           | 4   | 12               | 12             | 36,5           | M18 x 1   | F355149.04 |
|                                                         | HSK-A100                          | 4   | 16               | 16             | 44             | M24 x 1,5 | F355149.08 |
| Softsynchro® 3 Modular/MQL                              | HSK-A63                           | 4   | 12               | 12             | 36,5           | M18 x 1   | F355349.02 |
|                                                         | HSK-A100                          | 4   | 16               | 16             | 44             | M24 x 1,5 | F355349.04 |



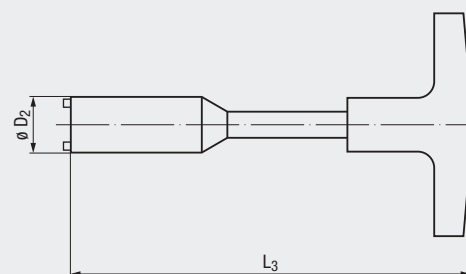
**Füllstücke 1)**
**Adapters**

**MQL  
1**

**Geeignet für Softsynchro® Modular/MQL**    Suitable for Softsynchro® Modular/MQL

**DIN 69090-4**

| Für Schaftgröße<br>For shank size | $\varnothing D$ | $\varnothing D_1$ | $L_1$ | G         |                   |
|-----------------------------------|-----------------|-------------------|-------|-----------|-------------------|
| HSK-A40                           | 4               | 8,4               | 8,3   | M12 x 1   | <b>F355335.01</b> |
| HSK-A63                           | 6               | 12,4              | 12,3  | M18 x 1   | <b>F355135.01</b> |
| HSK-A100                          | 10              | 16,4              | 16,4  | M24 x 1,5 | <b>F355135.02</b> |

1) Füllstücke werden für HSK-A-Schäfte verwendet, d.h. Außenkontur entspricht DIN 69893-1 Form A, Innenkontur nach DIN 69893-1 Form C  
 Adapters are used for HSK-A shanks, that means outside contour acc. DIN 69893-1 form A, inside contour acc. DIN 69893-1 form C

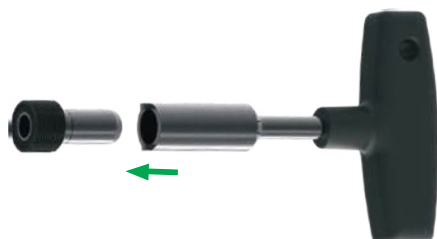
**Montageschlüssel**
**Assembly wrenches**


| Für Schaftgröße<br>For shank size | $\varnothing D_2$ | $L_3$ |                   |
|-----------------------------------|-------------------|-------|-------------------|
| HSK-A40                           | 11                | 111   | <b>F330099.02</b> |
| HSK-A50                           | 15                | 120   | <b>F330099.03</b> |
| HSK-A63                           | 17                | 122   | <b>F330099.04</b> |
| HSK-A80                           | 18,5              | 126   | <b>F330099.05</b> |
| HSK-A100                          | 22                | 141   | <b>F330099.06</b> |

**Montage des Kühlschmierstoffrohrs im HSK-Schaft**

1. Montageschlüssel auf das Kühlschmierstoffrohr stecken.

**Wichtig:** Auf die Stellung der Zapfen zu den Nuten achten!



2. Kühlschmierstoffrohr in den Schaft einschrauben.


**Assembly of the coolant tube in the hollow taper (HSK) shank**

1. Put assembly wrench on the coolant tube.

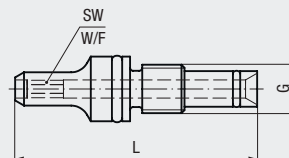
**Important:** Watch the position of the pins against the grooves



2. Screw coolant tube into the shank.

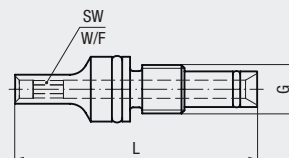


**Von beiden Seiten justierbar, für Werkzeugschäfte mit Innenzentrierung 60°**  
Adjustable from both sides, for tool shanks with female centre 60°



| Für Ausführung<br>For design                                           | Werkzeugkegel<br>Tool taper                                                                                              |  | $\varnothing D_1$ | L    | G       | SW<br>(W/F) |                   |
|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|------|---------|-------------|-------------------|
| <b>Softsynchro® 1 Modular/IKZ</b><br><b>Softsynchro® 1 Modular/MQL</b> | Innenkegel<br>Internal taper<br>60°<br> | M4,5 - M10                                                                        | 6 / 7             | 40   | M8 x 1  | 2,5         | <b>F355188.01</b> |
|                                                                        |                                                                                                                          | M8, M9, M11, M12                                                                  | 8 / 9             | 35   | M8 x 1  | 2,5         | <b>F355188.02</b> |
|                                                                        |                                                                                                                          | M10                                                                               | 10                | 31,5 | M8 x 1  | 2,5         | <b>F355188.03</b> |
| <b>Softsynchro® 3 Modular/IKZ</b><br><b>Softsynchro® 3 Modular/MQL</b> |                                         | M12                                                                               | 9                 | 46,5 | M10 x 1 | 3           | <b>F355388.01</b> |
|                                                                        |                                                                                                                          | M10 - M16                                                                         | 10 - 12           | 42   | M10 x 1 | 3           | <b>F355388.02</b> |
|                                                                        |                                                                                                                          | M18 - M20                                                                         | 14 - 16           | 39   | M10 x 1 | 3           | <b>F355388.03</b> |

**Von beiden Seiten justierbar, für Werkzeugschäfte mit Außenzentrierung 90°**  
Adjustable from both sides, for tool shanks with male centre 90°



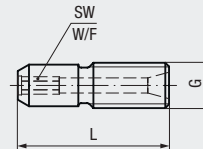
| Für Ausführung<br>For design      | Werkzeugkegel<br>Tool taper                                                                                                |  | $\varnothing D_1$ | L    | G       | SW<br>(W/F) |                   |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------|------|---------|-------------|-------------------|
| <b>Softsynchro® 1 Modular/MQL</b> | Außenkegel<br>External taper<br>90°<br> | M4,5 - M6, M8                                                                       | 6                 | 40   | M8 x 1  | 2,5         | <b>F355188.04</b> |
|                                   |                                                                                                                            | M7, M10                                                                             | 7                 | 40   | M8 x 1  | 2,5         | <b>F355188.05</b> |
|                                   |                                                                                                                            | M8                                                                                  | 8                 | 35   | M8 x 1  | 2,5         | <b>F355188.06</b> |
|                                   |                                                                                                                            | M12                                                                                 | 9                 | 34   | M8 x 1  | 2,5         | <b>F355188.07</b> |
|                                   |                                                                                                                            | M10                                                                                 | 10                | 30   | M8 x 1  | 2,5         | <b>F355188.08</b> |
| <b>Softsynchro® 3 Modular/MQL</b> |                                         | M12                                                                                 | 9                 | 46,5 | M10 x 1 | 3           | <b>F355388.04</b> |
|                                   |                                                                                                                            | M10                                                                                 | 10                | 42,5 | M10 x 1 | 3           | <b>F355388.05</b> |
|                                   |                                                                                                                            | M14 - M16                                                                           | 11 - 12           | 42   | M10 x 1 | 3           | <b>F355388.06</b> |
|                                   |                                                                                                                            | M18                                                                                 | 14                | 40,5 | M10 x 1 | 3           | <b>F355388.07</b> |
|                                   |                                                                                                                            | M20                                                                                 | 16                | 40   | M10 x 1 | 3           | <b>F355388.08</b> |





**Für Werkzeugschäfte mit Innenzentrierung 60°**

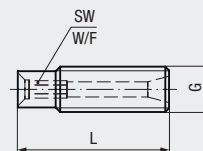
For tool shanks with female centre 60°



| Für Ausführung<br>For design                                                                                                         | Werkzeugkegel<br>Tool taper                                                                                                                   |  | $\varnothing D_1$ | L  | G  | SW<br>(W/F) |                   |
|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|----|----|-------------|-------------------|
| <b>Speedsynchro® Modular/IKZ</b><br><b>Speedsynchro® Modular/MQL</b><br><b>Softsynchro® Slim/IKZ</b><br><b>Softsynchro® Slim/MQL</b> | <b>Innenkegel</b><br><b>Internal taper</b><br><b>60°</b><br> | M4,5 - M10                                                                        | 6 / 7             | 20 | M6 | 2           | <b>F375188.01</b> |
|                                                                                                                                      |                                                                                                                                               | M8, M9, M11, M12                                                                  | 8 / 9             | 15 | M6 | 2           | <b>F375188.02</b> |
|                                                                                                                                      |                                                                                                                                               |                                                                                   |                   |    |    |             |                   |
|                                                                                                                                      |                                                                                                                                               |                                                                                   |                   |    |    |             |                   |
|                                                                                                                                      |                                                                                                                                               |                                                                                   |                   |    |    |             |                   |

**Für Werkzeugschäfte mit Außenzentrierung 90°**

For tool shanks with male centre 90°



| Für Ausführung<br>For design                                     | Werkzeugkegel<br>Tool taper                                                                                                                     |  | $\varnothing D_1$ | L    | G  | SW<br>(W/F) |                   |
|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------|------|----|-------------|-------------------|
| <b>Speedsynchro® Modular/MQL</b><br><b>Softsynchro® Slim/MQL</b> | <b>Außenkegel</b><br><b>External taper</b><br><b>90°</b><br> | M4,5 - M6, M8                                                                       | 6                 | 20   | M6 | 2           | <b>F375188.03</b> |
|                                                                  |                                                                                                                                                 | M7                                                                                  | 7                 | 20   | M6 | 2           | <b>F375188.04</b> |
|                                                                  |                                                                                                                                                 | M8                                                                                  | 8                 | 15   | M6 | 2           | <b>F375188.05</b> |
|                                                                  |                                                                                                                                                 | M12                                                                                 | 9                 | 14,3 | M6 | 2           | <b>F375188.06</b> |
|                                                                  |                                                                                                                                                 |                                                                                     |                   |      |    |             |                   |

Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

MQL  
MMS

SFI

SWITCH-  
MASTER

HF

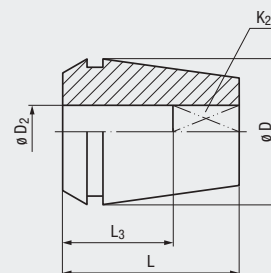
EM

Zubehör  
Accessories


Mit Vierkantmitnahme  
With square drive

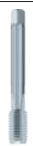
# ER-GB

DIN ISO 15488



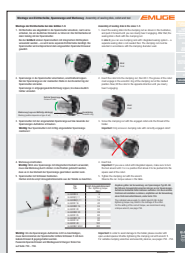
| Typ · Type                                                                            | ER 11 GB | ER 16 GB | ER 20 GB | ER 25 GB | ER 32 GB | ER 40 GB  | ER 50 GB  |
|---------------------------------------------------------------------------------------|----------|----------|----------|----------|----------|-----------|-----------|
|  Typ | M2 - M8  | M4 - M12 | M4 - M12 | M4 - M20 | M4 - M20 | M10 - M30 | M30 - M42 |
| ø D                                                                                   | 11       | 16       | 20       | 25       | 32       | 40        | 51        |
| L                                                                                     | 18       | 27,5     | 31,5     | 34       | 40       | 46        | 60        |

## DIN

| ø D <sub>2</sub> | K <sub>2</sub> |  |  |                     | L <sub>3</sub> |                     | L <sub>3</sub> |                     | L <sub>3</sub> |                     | L <sub>3</sub> |                     | L <sub>3</sub> |                    | L <sub>3</sub>        |
|------------------|----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------|----------------|---------------------|----------------|---------------------|----------------|---------------------|----------------|---------------------|----------------|--------------------|-----------------------|
| 2,5              | 2,1            | M1 - M1,8                                                                         | M3,5                                                                              | <b>F0942011.2.5</b> | 12             |                     |                |                     |                |                     |                |                     |                |                    |                       |
| 2,8              | 2,1            | M2 - M2,6                                                                         | M4                                                                                | <b>F0942011.2.8</b> | 12             |                     |                |                     |                |                     |                |                     |                |                    |                       |
| 3,5              | 2,7            | M3                                                                                | M4,5 - M5                                                                         | <b>F0942011.3.5</b> | 14             |                     |                |                     |                |                     |                |                     |                |                    |                       |
| 4                | 3              | M3,5                                                                              | M5,5                                                                              | <b>F0942011.4</b>   | 14             |                     |                |                     |                |                     |                |                     |                |                    |                       |
| 4,5              | 3,4            | M4                                                                                | M6                                                                                | <b>F0942011.4.5</b> | 14             | <b>F0942016.4.5</b> | 15             | <b>F0942020.4.5</b> | 15             | <b>F0942025.4.5</b> | 15             | <b>F0942032.4.5</b> | 15             |                    |                       |
| 6                | 4,9            | M4,5 - M6                                                                         | M8                                                                                | <b>F0942011.6</b>   | 14             | <b>F0942016.6</b>   | 18             | <b>F0942020.6</b>   | 18             | <b>F0942025.6</b>   | 18             | <b>F0942032.6</b>   | 18             |                    |                       |
| 7                | 5,5            | M7                                                                                | M9 - M10                                                                          |                     |                | <b>F0942016.7</b>   | 18             | <b>F0942020.7</b>   | 18             | <b>F0942025.7</b>   | 18             | <b>F0942032.7</b>   | 18             |                    |                       |
| 8                | 6,2            | M8                                                                                | M11                                                                               |                     |                | <b>F0942016.8</b>   | 22             | <b>F0942020.8</b>   | 22             | <b>F0942025.8</b>   | 22             | <b>F0942032.8</b>   | 22             |                    |                       |
| 9                | 7              | M9                                                                                | M12                                                                               |                     |                | <b>F0942016.9</b>   | 22             | <b>F0942020.9</b>   | 22             | <b>F0942025.9</b>   | 22             | <b>F0942032.9</b>   | 22             | <b>F0942040.9</b>  | 22                    |
| 10               | 8              | M10                                                                               |                                                                                   |                     |                |                     |                | <b>F0942020.10</b>  | 25             | <b>F0942025.10</b>  | 25             | <b>F0942032.10</b>  | 25             | <b>F0942040.10</b> | 25                    |
| 11               | 9              |                                                                                   | M14                                                                               |                     |                |                     |                |                     |                | <b>F0942025.11</b>  | 25             | <b>F0942032.11</b>  | 25             | <b>F0942040.11</b> | 25                    |
| 12               | 9              |                                                                                   | M16                                                                               |                     |                |                     |                |                     |                | <b>F0942025.12</b>  | 25             | <b>F0942032.12</b>  | 25             | <b>F0942040.12</b> | 25                    |
| 14               | 11             |                                                                                   | M18                                                                               |                     |                |                     |                |                     |                | <b>F0942025.14</b>  | 25             | <b>F0942032.14</b>  | 25             | <b>F0942040.14</b> | 25                    |
| 16               | 12             |                                                                                   | M20                                                                               |                     |                |                     |                |                     |                | <b>F0942025.16</b>  | 25             | <b>F0942032.16</b>  | 25             | <b>F0942040.16</b> | 25                    |
| 18               | 14,5           |                                                                                   | M22 - M24                                                                         |                     |                |                     |                |                     |                |                     |                |                     |                | <b>F0942040.18</b> | 25                    |
| 20               | 16             |                                                                                   | M27                                                                               |                     |                |                     |                |                     |                |                     |                |                     |                | <b>F0942040.20</b> | 28                    |
| 22               | 18             |                                                                                   | M30                                                                               |                     |                |                     |                |                     |                |                     |                |                     |                | <b>F0942040.22</b> | 28                    |
| 25               | 20             |                                                                                   | M33                                                                               |                     |                |                     |                |                     |                |                     |                |                     |                |                    | <b>F0942050.22</b> 41 |
| 28               | 22             |                                                                                   | M36                                                                               |                     |                |                     |                |                     |                |                     |                |                     |                |                    | <b>F0942050.25</b> 41 |
| 32               | 24             |                                                                                   | M39 - M42                                                                         |                     |                |                     |                |                     |                |                     |                |                     |                |                    | <b>F0942050.28</b> 41 |
|                  |                |                                                                                   |                                                                                   |                     |                |                     |                |                     |                |                     |                |                     |                |                    | <b>F0942050.32</b> 41 |

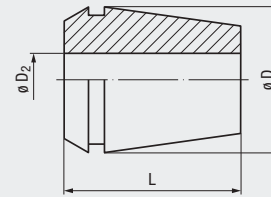
Ausführungen für Gewindebohrer / Gewindeformer mit ISO-Baumaßen auf Anfrage erhältlich  
Versions for taps / cold-forming taps with ISO dimensions are available on request

Weitere Ausführungen auf Anfrage  
Further designs upon request



Montage von Dichtscheibe,  
Spannzange und Werkzeug  
siehe Seite 755

Assembly of sealing disk,  
collet and tool,  
see page 755

**ER****DIN ISO 15488**Ohne Vierkantmitnahme  
Without square drive

$p_{max}$   
100 bar  
(1400 psi)

Product  
FinderSoft-  
synchroSpeed-  
synchro

KSN

MQL  
MMS

SFL

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

Typ · Type

**ER 08****ER 11****ER 16****ER 20****ER 32****ER 40****ER 50** $\varnothing D_2$ 

1,5 - 4,5

1,5 - 7

2 - 10

3 - 11

3 - 18

11 - 22

34 - 36

 $\varnothing D$ 

8

11

16

20

32

40

50

L

13,6

18

27,5

31,5

40

46

60

 $\varnothing D_2$ 

2 - 1,5

**F0943008.2****F0943011.2**

2,5 - 2

**F0943008.2.5****F0943011.2.5**

3 - 2,5

**F0943008.3****F0943011.3**

3 - 2

**F0943016.3**

3,5 - 3

**F0943008.3.5****F0943011.3.5**

4 - 3,5

**F0943008.4****F0943011.4**

4 - 3

**F0943016.4****F0943020.4****F0943032.4**

4,5 - 4

**F0943008.4.5****F0943011.4.5**

5 - 4,5

**F0943011.5**

5 - 4

**F0943016.5****F0943020.5****F0943032.5**

6 - 5,5

**F0943011.6**

6 - 5

**F0943016.6****F0943020.6****F0943032.6**

7 - 6,5

**F0943011.7**

7 - 6

**F0943016.7****F0943020.7****F0943032.7**

9 - 8

**F0943016.9****F0943020.9****F0943032.9**

10 - 9

**F0943016.10**

11 - 10

**F0943020.11****F0943032.11**

12 - 11

**F0943032.12****F0943040.12**

14 - 13

**F0943032.14****F0943040.14**

16 - 15

**F0943032.16****F0943040.16**

18 - 17

**F0943032.18****F0943040.18**

20 - 19

**F0943040.20**

22 - 21

**F0943040.22**

36 - 34

**F0943050.36**Weitere Ausführungen auf Anfrage  
Further designs upon request

Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

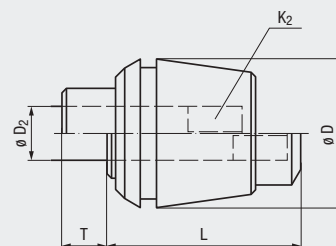
HF

EM

Zubehör  
Accessories

# PCM ET1

**Mit Vierkantmitnahme und Längenausgleich auf Zug**  
With square drive and length compensation on tension



Typ · Type

**PCM ET1-12**

**PCM ET1-20**

**PCM ET1-32**

**PCM ET1-40**



M2 - M4

M2 - M10

M4 - M16

M4,5 - M20

T

5,5

7

10

13

ø D

11,5

21

33

41

L

21,5

31

43

54

**DIN**

ø D<sub>2</sub> K<sub>2</sub>



| ø D <sub>2</sub> | K <sub>2</sub> |           |           |                     |                     |                     |                    |
|------------------|----------------|-----------|-----------|---------------------|---------------------|---------------------|--------------------|
| 2,8              | 2,1            | M2 - M2,6 | M4        | <b>F0945011.2.8</b> | <b>F0945020.2.8</b> |                     |                    |
| 3,5              | 2,7            | M3        | M4,5 - M5 |                     | <b>F0945020.3.5</b> |                     |                    |
| 4                | 3              | M3,5      | M5,5      |                     | <b>F0945020.4</b>   |                     |                    |
| 4,5              | 3,4            | M4        | M6        |                     | <b>F0945020.4.5</b> | <b>F0945032.4.5</b> |                    |
| 6                | 4,9            | M4,5 - M6 | M8        |                     | <b>F0945020.6</b>   | <b>F0945032.6</b>   | <b>F0945040.6</b>  |
| 7                | 5,5            | M7        | M9 - M10  |                     | <b>F0945020.7</b>   | <b>F0945032.7</b>   | <b>F0945040.7</b>  |
| 8                | 6,2            | M8        | M11       |                     |                     | <b>F0945032.8</b>   | <b>F0945040.8</b>  |
| 9                | 7              | M9        | M12       |                     |                     | <b>F0945032.9</b>   | <b>F0945040.9</b>  |
| 10               | 8              | M10       |           |                     |                     | <b>F0945032.10</b>  | <b>F0945040.10</b> |
| 11               | 9              |           | M14       |                     |                     | <b>F0945032.11</b>  | <b>F0945040.11</b> |
| 12               | 9              |           | M16       |                     |                     | <b>F0945032.12</b>  | <b>F0945040.12</b> |
| 14               | 11             |           | M18       |                     |                     |                     | <b>F0945040.14</b> |
| 16               | 12             |           | M20       |                     |                     |                     | <b>F0945040.16</b> |

Die Klemmung des Gewindewerkzeugs erfolgt über 4 Gewindestifte am Vierkant  
The threading tool is clamped by means of 4 worm screws on the square

Weitere Ausführungen auf Anfrage  
Further designs upon request

Auf Grund des Längenausgleichs können keine Dichtscheiben in die Spannmutter gesetzt werden  
Due to the length compensation, sealing disks cannot be used in the clamping nut



## PGR-GB

Mit Vierkantmitnahme und Längennachstellung  
With square drive and length adjustment

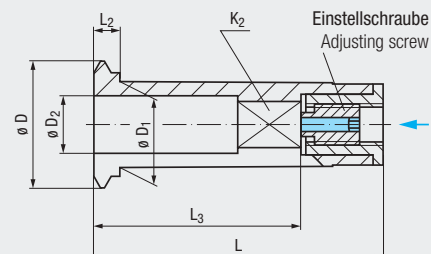
powRgrip®



$p_{\max}$   
50 bar  
(700 psi)



$L_+$

Product  
FinderSoft-  
synchroSpeed-  
synchro

KSN

MQL  
MMS

SFB

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

Typ · Type

PGR 15 GB

PGR 25 GB



M4 - M12

M8 - M20

 $\emptyset D$ 

22

33

 $\emptyset D_1$ 

15

25

L

50,5

60,5

 $L_1$ 

4,5

6

## DIN

| $\emptyset D_2$ | $K_2$ |  |  |                     | $L_3$ |      |                    | $L_3$ |      |
|-----------------|-------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------|-------|------|--------------------|-------|------|
|                 |       |                                                                                    |                                                                                    |                     | min.  | max. |                    | min.  | max. |
| 3,5             | 2,7   | M3                                                                                 | M4,5 - M5                                                                          | <b>F0942615.3.5</b> | 27    | 29   |                    |       |      |
| 4,5             | 3,4   | M4                                                                                 | M6                                                                                 | <b>F0942615.4.5</b> | 27    | 29   |                    |       |      |
| 6               | 4,9   | M4,5 - M6                                                                          | M8                                                                                 | <b>F0942615.6</b>   | 29    | 31   | <b>F0942625.6</b>  | 29    | 31   |
| 7               | 5,5   | M7                                                                                 | M9 - M10                                                                           | <b>F0942615.7</b>   | 29    | 31   |                    |       |      |
| 8               | 6,2   | M8                                                                                 | M11                                                                                | <b>F0942615.8</b>   | 33,5  | 36   | <b>F0942625.8</b>  | 33,5  | 36   |
| 9               | 7     | M9                                                                                 | M12                                                                                | <b>F0942615.9</b>   | 34,5  | 37   | <b>F0942625.9</b>  | 34,5  | 37   |
| 10              | 8     | M10                                                                                |                                                                                    | <b>F0942615.10</b>  | 35,5  | 38   | <b>F0942625.10</b> | 38,5  | 41   |
| 11              | 9     |                                                                                    | M14                                                                                |                     |       |      | <b>F0942625.11</b> | 39,5  | 42   |
| 12              | 9     |                                                                                    | M16                                                                                |                     |       |      | <b>F0942625.12</b> | 39,5  | 42   |
| 14              | 11    |                                                                                    | M18                                                                                |                     |       |      | <b>F0942625.14</b> | 41,5  | 44   |
| 16              | 12    |                                                                                    | M20                                                                                |                     |       |      | <b>F0942625.16</b> | 42,5  | 45   |



PGR-Spannzangen ohne  
Vierkantmitnahme auf Anfrage

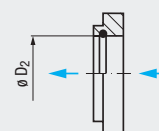
PGR collets without square drive  
upon request



**DS/ER**

### Dichtscheiben

#### Sealing disks



$p_{\max}$   
100 bar  
(1400 psi)

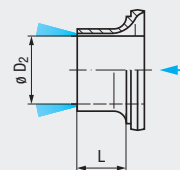


## DIN

| $\emptyset D_2$ | K <sub>2</sub> |           |           |            |              |              |              |              |             |             |
|-----------------|----------------|-----------|-----------|------------|--------------|--------------|--------------|--------------|-------------|-------------|
| 2,8             | 2,1            | M2 - M2,6 | M4        | F0941511.3 |              |              |              |              |             |             |
| 4               | 3              | M3,5      | M5,5      | F0941511.4 | F0941516.4   |              |              |              |             |             |
| 4,5             | 3,4            | M4        | M6        | F0941511.5 | F0941516.4.5 | F0941520.4.5 | F0941525.4.5 | F0941532.4.5 |             |             |
| 6               | 4,9            | M4,5 - M6 | M8        | F0941511.6 | F0941516.6   | F0941520.6   | F0941525.6   | F0941532.6   |             |             |
| 7               | 5,5            | M7        | M9 - M10  |            | F0941516.7   | F0941520.7   | F0941525.7   | F0941532.7   |             |             |
| 8               | 6,2            | M8        | M11       |            | F0941516.8   | F0941520.8   | F0941525.8   | F0941532.8   |             |             |
| 9               | 7              | M9        | M12       |            | F0941516.9   | F0941520.9   | F0941525.9   | F0941532.9   | F0941540.9  |             |
| 10              | 8              | M10       |           |            | F0941516.10  | F0941520.10  | F0941525.10  | F0941532.10  | F0941540.10 |             |
| 11              | 9              |           | M14       |            |              |              | F0941525.11  | F0941532.11  | F0941540.11 |             |
| 12              | 9              |           | M16       |            |              |              | F0941525.12  | F0941532.12  | F0941540.12 |             |
| 14              | 11             |           | M18       |            |              |              | F0941525.14  | F0941532.14  | F0941540.14 |             |
| 16              | 12             |           | M20       |            |              |              | F0941525.16  | F0941532.16  | F0941540.16 |             |
| 18              | 14,5           |           | M22 - M24 |            |              |              |              |              | F0941540.18 |             |
| 20              | 16             |           | M27       |            |              |              |              |              | F0941540.20 |             |
| 22              | 18             |           | M30       |            |              |              |              |              | F0941540.22 | F0941550.22 |
| 25              | 20             |           | M33       |            |              |              |              |              |             | F0941550.25 |
| 28              | 22             |           | M36       |            |              |              |              |              |             | F0941550.28 |
| 32              | 24             |           | M39 - M42 |            |              |              |              |              |             | F0941550.32 |
| 36              | 29             |           | M45 - M48 |            |              |              |              |              |             | F0941550.36 |

**KS/ER**

**Kühlscheiben**  
Coolant flush disks



$p_{\max}$   
100 bar  
(1400 psi)



## DIN

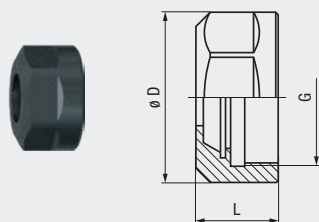
| Ø D <sub>2</sub> | K <sub>2</sub> |           |          |                   | L   |                    | L  |                    | L  |                    | L  |
|------------------|----------------|-----------|----------|-------------------|-----|--------------------|----|--------------------|----|--------------------|----|
| 2,8              | 2,1            | M2 - M2,6 | M4       | <b>F0941711.3</b> | 5,5 |                    |    |                    |    |                    |    |
| 4                | 3              | M3,5      | M5,5     | <b>F0941711.4</b> | 5,5 | <b>F0941716.4</b>  | 11 |                    |    |                    |    |
| 4,5              | 3,4            | M4        | M6       | <b>F0941711.5</b> | 5,5 |                    |    |                    |    |                    |    |
| 6                | 4,9            | M4,5 - M6 | M8       | <b>F0941711.6</b> | 5,5 | <b>F0941716.6</b>  | 11 | <b>F0941720.6</b>  | 11 | <b>F0941732.6</b>  | 11 |
| 7                | 5,5            | M7        | M9 - M10 |                   |     | <b>F0941716.7</b>  | 11 | <b>F0941720.7</b>  | 11 | <b>F0941732.7</b>  | 11 |
| 8                | 6,2            | M8        | M11      |                   |     | <b>F0941716.8</b>  | 11 | <b>F0941720.8</b>  | 11 | <b>F0941732.8</b>  | 11 |
| 9                | 7              | M9        | M12      |                   |     | <b>F0941716.9</b>  | 11 | <b>F0941720.9</b>  | 11 | <b>F0941732.9</b>  | 11 |
| 10               | 8              | M10       |          |                   |     | <b>F0941716.10</b> | 2  | <b>F0941720.10</b> | 11 | <b>F0941732.10</b> | 11 |
| 11               | 9              |           | M14      |                   |     |                    |    |                    |    | <b>F0941732.11</b> | 11 |
| 12               | 9              |           | M16      |                   |     |                    |    |                    |    | <b>F0941732.12</b> | 11 |
| 14               | 11             |           | M18      |                   |     |                    |    |                    |    | <b>F0941732.14</b> | 11 |
| 16               | 12             |           | M20      |                   |     |                    |    |                    |    | <b>F0941732.16</b> | 11 |



## Hi-Q/ER

Ohne Abdichtung  
Without sealing

$p_{\max}$   
100 bar  
(1400 psi)



| Typ · Type | Hi-Q/ER 11 |
|------------|------------|
| Ø D        | 19         |
| L          | 11,3       |
| G          | M14 x 0,75 |

Für Spannzange  
For collet

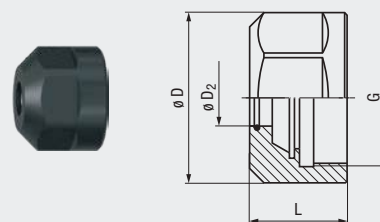
ER 11 (GB)

F0940911

## Hi-Q/ERC

Mit integrierter Abdichtung  
With integrated sealing

$p_{\max}$   
100 bar  
(1400 psi)



| Typ · Type | Hi-Q/ERC 11 |
|------------|-------------|
| Ø D        | 19          |
| L          | 14,6        |
| G          | M14 x 0,75  |

## DIN

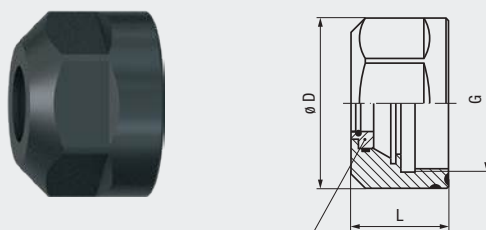
| Ø D <sub>2</sub> | K <sub>2</sub> |           |          | Für Spannzange<br>For collet |            |
|------------------|----------------|-----------|----------|------------------------------|------------|
| 6                | 4,9            | M4,5 - M6 | M8       | ER 11 (GB)                   | F0940711.6 |
| 7                | 5,5            | M7        | M9 - M10 | ER 11 (GB)                   | F0940711.7 |

## Hi-Q/ERC

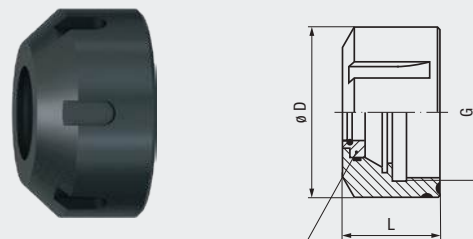
Für Dichtscheiben und Kùhlscheiben  
For sealing disks and coolant flush disks

$p_{\max}$   
100 bar  
(1400 psi)

Hi-Q/ERC 11-20

Dichtscheibe / Kùhlscheibe  
Sealing disk / Coolant flush disk

Hi-Q/ERC 25-40

Dichtscheibe / Kùhlscheibe  
Sealing disk / Coolant flush disk

| Typ · Type | Hi-Q/ERC 11 | Hi-Q/ERC 16 | Hi-Q/ERC 20 | Hi-Q/ERC 25 | Hi-Q/ERC 32 | Hi-Q/ERC 40 |
|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Ø D        | 19          | 28          | 34          | 42          | 50          | 63          |
| L          | 14,6        | 22,5        | 24          | 25          | 27,5        | 30,5        |
| G          | M14 x 0,75  | M22 x 1,5   | M25 x 1,5   | M32 x 1,5   | M40 x 1,5   | M50 x 1,5   |

Für Spannzange  
For colletDichtscheibe  
Sealing diskKùhlscheibe  
Coolant flush disk

|            |          |          |          |          |          |          |
|------------|----------|----------|----------|----------|----------|----------|
| ER 11 (GB) | DS/ER 11 | KS/ER 11 | F0940711 |          |          |          |
| ER 16 (GB) | DS/ER 16 | KS/ER 16 | F0940716 |          |          |          |
| ER 20 (GB) | DS/ER 20 | KS/ER 20 |          | F0940720 |          |          |
| ER 25 (GB) | DS/ER 25 |          |          | F0940725 |          |          |
| ER 32 (GB) | DS/ER 32 | KS/ER 32 |          |          | F0940732 |          |
| ER 40 (GB) | DS/ER 40 |          |          |          |          | F0940740 |

Dichtscheiben und Kùhlscheiben sind nicht im Lieferumfang enthalten, bitte extra bestellen (siehe Seite 750)  
Sealing disks and coolant flush disks are not included in the delivery, please order separately (see page 750)

Product  
FinderSoft-  
synchroSpeed-  
synchro

KSN

MQL  
MMS

SFE

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories



Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

HF

EM

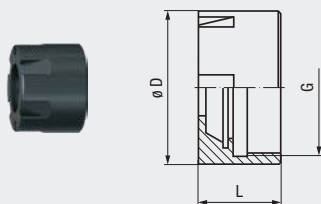
Zubehör  
Accessories

## Hi-Q/ERM

Ohne Abdichtung  
Without sealing



$p_{max}$   
100 bar  
(1400 psi)



| Typ · Type | Hi-Q/ERM 8 | Hi-Q/ERM 11 |
|------------|------------|-------------|
| Ø D        | 12         | 16          |
| L          | 10,8       | 12          |
| G          | M10 x 0,75 | M13 x 0,75  |

Für Spannzange  
For collet

ER 08  
ER 11 (GB)

**F0940308**

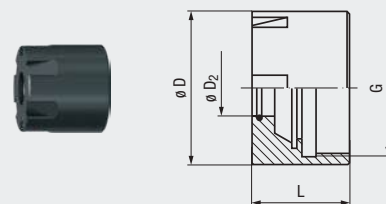
**F0940311**

## Hi-Q/ERMC

Mit integrierter Abdichtung  
With integrated sealing



$p_{max}$   
100 bar  
(1400 psi)



| Typ · Type | Hi-Q/ERMC 11 |
|------------|--------------|
| Ø D        | 16           |
| L          | 14,6         |
| G          | M13 x 0,75   |

### DIN

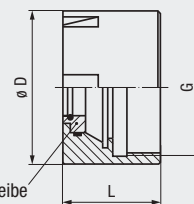
| Ø D <sub>2</sub> | K <sub>2</sub> |           |           | Für Spannzange<br>For collet |                     |
|------------------|----------------|-----------|-----------|------------------------------|---------------------|
| 3,5              | 2,7            | M3        | M4,5 - M5 | ER 11 (GB)                   | <b>F0943511.3.5</b> |
| 4,5              | 3,4            | M4        | M6        | ER 11 (GB)                   | <b>F0943511.4.5</b> |
| 6                | 4,9            | M4,5 - M6 | M8        | ER 11 (GB)                   | <b>F0943511.6</b>   |
| 7                | 5,5            | M7        | M9 - M10  | ER 11 (GB)                   | <b>F0943511.7</b>   |

## Hi-Q/ERMC

Für Dichtscheiben und Kühlschleiben  
For sealing disks and coolant flush disks



$p_{max}$   
100 bar  
(1400 psi)



Dichtscheibe / Kühlschleibe  
Sealing disk / Coolant flush disk



| Typ · Type | Hi-Q/ERMC 16 | Hi-Q/ERMC 20 | Hi-Q/ERMC 25 |
|------------|--------------|--------------|--------------|
| Ø D        | 22           | 28           | 35           |
| L          | 22           | 24           | 25           |
| G          | M19 x 1      | M24 x 1      | M30 x 1      |

Für Spannzange  
For collet

Dichtscheibe  
Sealing disk

Kühlscheibe  
Coolant flush disk

ER 16 (GB)  
ER 20 (GB)  
ER 25 (GB)

DS/ER 16  
DS/ER 20  
DS/ER 25

KS/ER 16  
KS/ER 20

**F0943516**

**F0943520**

**F0943525**

Dichtscheiben und Kühlschleiben sind nicht im Lieferumfang enthalten, bitte extra bestellen (siehe Seite 750)  
Sealing disks and coolant flush disks are not included in the delivery, please order separately (see page 750)

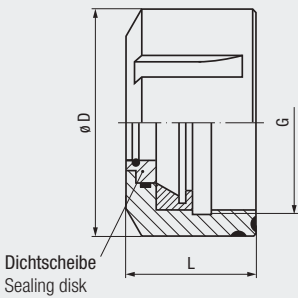


Hi-Q/ERBC

Für Dichtscheiben  
For sealing disks



p<sub>max</sub>  
100 bar  
(1400 psi)

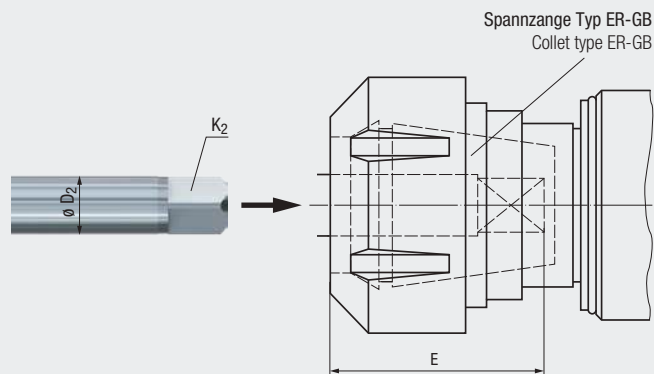


|                              |                              |                 |  |  |  |
|------------------------------|------------------------------|-----------------|--|--|--|
| Typ · Type                   |                              | Hi-Q/ERBC 50 EF |  |  |  |
| ø D                          |                              | 78              |  |  |  |
| L                            |                              | 42,5            |  |  |  |
| G                            |                              | M64 x 2         |  |  |  |
| Für Spannzange<br>For collet | Dichtscheibe<br>Sealing disk |                 |  |  |  |
| ER 50 (GB)                   | DS/ER 50                     | F0941850        |  |  |  |

Dichtscheiben sind nicht im Lieferumfang enthalten, bitte extra bestellen (siehe Seite 750)  
Sealing disks are not included in the delivery, please order separately (see page 750)

- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFR
- SWITCH-MASTER
- HF
- EM
- Zubehör  
Accessories





| Spannzangen<br>Collets        |                |                                                                                   |                                                                                   | ER 8                                  |      | ER 11 GB                              |            |                             | ER 16 GB                    |    |
|-------------------------------|----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------|------|---------------------------------------|------------|-----------------------------|-----------------------------|----|
| Spannmuttern<br>Clamping nuts |                |                                                                                   |                                                                                   | Hi-Q/ERM 8                            |      | Hi-Q/ERM 11                           | Hi-Q/ER 11 | Hi-Q/ERC 11<br>Hi-Q/ERMC 11 | Hi-Q/ERC 16<br>Hi-Q/ERMC 16 |    |
| DIN                           |                |  |  | Einstecktiefen E<br>Clamping depths E |      | Einstecktiefen E<br>Clamping depths E |            |                             |                             |    |
| ø D <sub>2</sub>              | K <sub>2</sub> |                                                                                   |                                                                                   | min.                                  | max. |                                       |            |                             |                             |    |
| 2                             | –              | M0,5 - M0,9                                                                       |                                                                                   | 9                                     | 20   |                                       |            |                             |                             |    |
| 2,2                           | –              |                                                                                   | M3                                                                                | 9                                     | 20   |                                       |            |                             |                             |    |
| 2,5                           | 2,1            | M1 - M1,8                                                                         | M3,5                                                                              | 14                                    | 20   | 18                                    | 17         | 21                          |                             |    |
| 2,8                           | 2,1            | M2 - M2,6                                                                         | M4                                                                                | 15                                    | 20   | 18                                    | 17         | 21                          |                             |    |
| 3,5                           | 2,7            | M3                                                                                | M4,5 - M5                                                                         | 15                                    | 19,5 | 21                                    | 20         | 24                          |                             |    |
| 4                             | 3              | M3,5                                                                              | M5,5                                                                              | 15                                    | 19   | 21                                    | 20         | 24                          |                             |    |
| 4,5                           | 3,4            | M4                                                                                | M6                                                                                | 15                                    | 19   | 21                                    | 20         | 24                          |                             | 26 |
| 6                             | 4,9            | M4,5 - M6                                                                         | M8                                                                                |                                       |      | 23                                    | 22         | 26                          |                             | 31 |
| 7                             | 5,5            | M7                                                                                | M9 - M10                                                                          |                                       |      |                                       |            |                             |                             | 31 |
| 8                             | 6,2            | M8                                                                                | M11                                                                               |                                       |      |                                       |            |                             |                             | 36 |
| 9                             | 7              | M9                                                                                | M12                                                                               |                                       |      |                                       |            |                             |                             | 37 |

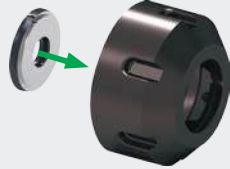
| Spannzangen<br>Collets        |                  |                                                                                     |                                                                                     | ER 20 GB                              | ER 25 GB                    | ER 32 GB    | ER 40 GB    | ER 50 GB        |
|-------------------------------|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|-----------------------------|-------------|-------------|-----------------|
| Spannmuttern<br>Clamping nuts |                  |                                                                                     |                                                                                     | Hi-Q/ERC 20<br>Hi-Q/ERMC 20           | Hi-Q/ERC 25<br>Hi-Q/ERMC 25 | Hi-Q/ERC 32 | Hi-Q/ERC 40 | Hi-Q/ERBC 50 EF |
| DIN                           |                  |  |  | Einstecktiefen E<br>Clamping depths E |                             |             |             |                 |
|                               | ø D <sub>2</sub> |                                                                                     |                                                                                     | K <sub>2</sub>                        |                             |             |             |                 |
| 4,5                           | 3,4              | M4                                                                                  | M6                                                                                  | 26                                    | 26                          | 26          |             |                 |
| 6                             | 4,9              | M4,5 - M6                                                                           | M8                                                                                  | 31                                    | 31                          | 31          |             |                 |
| 7                             | 5,5              | M7                                                                                  | M9 - M10                                                                            | 31                                    | 31                          | 31          |             |                 |
| 8                             | 6,2              | M8                                                                                  | M11                                                                                 | 36                                    | 36                          | 36          |             |                 |
| 9                             | 7                | M9                                                                                  | M12                                                                                 | 37                                    | 37                          | 37          | 37          |                 |
| 10                            | 8                | M10                                                                                 |                                                                                     | 41                                    | 41                          | 41          | 41          |                 |
| 11                            | 9                |                                                                                     | M14                                                                                 |                                       | 42                          | 42          | 42          |                 |
| 12                            | 9                |                                                                                     | M16                                                                                 |                                       | 42                          | 42          | 42          |                 |
| 14                            | 11               |                                                                                     | M18                                                                                 |                                       | 44                          | 44          | 44          |                 |
| 16                            | 12               |                                                                                     | M20                                                                                 |                                       | 45                          | 45          | 45          |                 |
| 18                            | 14,5             |                                                                                     | M22 - M24                                                                           |                                       |                             |             | 47          |                 |
| 20                            | 16               |                                                                                     | M27                                                                                 |                                       |                             |             | 52          |                 |
| 22                            | 18               |                                                                                     | M30                                                                                 |                                       |                             |             | 54          | 70              |
| 25                            | 20               |                                                                                     | M33                                                                                 |                                       |                             |             |             | 72              |
| 28                            | 22               |                                                                                     | M36                                                                                 |                                       |                             |             |             | 74              |
| 32                            | 24               |                                                                                     | M39 - M42                                                                           |                                       |                             |             |             | 76              |
| 36                            | 29               |                                                                                     | M45 - M48                                                                           |                                       |                             |             |             | 111 1)          |

1) In Kombination mit Spannzangen Typ ER 50 und Softsynchro® 5  
In combination with collets type ER 50 and Softsynchro® 5



## Montage der Dichtscheibe bei den Größen 1-5

1. Dichtscheibe wie abgebildet in die Spannmutter einsetzen, nach vorne schieben, bis ein deutliches Einrasten zu hören ist. Die Dichtscheibe ist dann bündig mit der Spannmutter.  
Bei der **Größe 0** können Spannmutter mit integriertem Dichtsystem verwendet werden – es wird keine separate Dichtscheibe benötigt. Die Spannmutter wird entsprechend dem eingesetzten Spanndurchmesser gewählt.



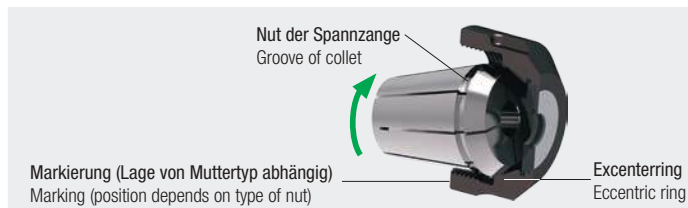
## Assembly of sealing disk in the sizes 1-5

1. Insert the sealing disk into the clamping nut as shown in the illustration, and push it forward until you can clearly hear it engaging. After that, the sealing disk is flush with the clamping nut.  
In **size 0**, you can use clamping nuts with integrated sealing system – a separate sealing disk is not needed then. The clamping nut must be selected in accordance with the clamping diameter used.



2. Spannzange in die Spannmutter einschieben, anschließend kippen. Nut der Spannzange an der markierten Stelle in den Exzenterring der Spannmutter einrasten. Spannzange in entgegengesetzte Richtung kippen, bis diese deutlich hörbar einrastet.

2. Insert the collet into the clamping nut, then tilt it. The groove of the collet must engage in the eccentric ring of the clamping nut at the marked position. Now, tilt the collet in the opposite direction until you clearly hear it engaging.



3. Spannmutter mit der eingerasteten Spannzange auf das Gewinde der Spannzangen-Aufnahme schrauben.  
**Wichtig:** Nur Spannmutter mit richtig eingerasteter Spannzange montieren!

3. Screw the clamping nut with the engaged collet onto the thread of the holder.  
**Important:** Only screw on clamping nuts with correctly engaged collet!



4. Werkzeug einschieben.  
**Wichtig:** Wird eine Spannzange mit integriertem Vierkant verwendet, muss das Werkzeug durch drehen in die Position gebracht werden, dass es in das Vierkant der Spannzange geschoben werden kann.
5. Spannmutter mit Schlüssel festziehen.  
Hierbei sind die empf. Anzugsdrehmomente aus der Tabelle zu beachten.

4. Insert tool.  
**Important:** If you use a collet with integrated square, make sure to turn the tool around until it is in a position that allows it to be pushed into the square seat of the collet.
5. Tighten the clamping nut with the wrench.  
Observe the rec. torque values in the table.



| Type<br>Type    | Empf. Anzugsdrehmoment<br>Rec. tightening torque<br>[Nm] |
|-----------------|----------------------------------------------------------|
| Hi-Q/ERM 8      | 6                                                        |
| Hi-Q/ER(C) 11   | 14                                                       |
| Hi-Q/ERM(C) 11  | 12                                                       |
| Hi-Q/ERC 16     | 40                                                       |
| Hi-Q/ERM 16     | 24                                                       |
| Hi-Q/ERC 20     | 32                                                       |
| Hi-Q/ERM 20     | 28                                                       |
| Hi-Q/ERC 25     | 80                                                       |
| Hi-Q/ERM 25     | 32                                                       |
| Hi-Q/ERC 32     | 90                                                       |
| Hi-Q/ERC 40     | 180                                                      |
| Hi-Q/ERBC 50 EF | 300                                                      |

Angaben gelten bei Verwendung von Spannzangen Typ ER-GB. Bei höheren Anzugsdrehmomenten können an der Spannzangen-Aufnahme bleibende Deformationen auftreten. Um das korrekte Drehmoment einstellen zu können, empfehlen wir die Verwendung eines Drehmomentschlüssels, siehe Seite 759.

The indicated values apply to collets type ER-GB. Higher tightening torque may result in the damage of the collet. For the setting of the correct torque, we recommend using a torque wrench, see page 759.

**Wichtig:** Um die Spannzangen-Aufnahme nicht zu beschädigen, muss beim Anziehen der Spannmutter mittels Schlüssel **1** mit dem Gabelschlüssel **2** gegengehalten werden. Passende Spannschlüssel und Montagevorrichtungen finden Sie auf Seite 756 - 758.

**Important:** In order to avoid damage to the holder, please counter with open-ended spanner **2** while tightening the clamping nut with wrench **1**. For suitable clamping wrenches and assembly devices, see pages 756 - 758.



Product Finder

Softsynchro

Speedsynchro

KSN

MQL MMS

SFM

SWITCH-MASTER

HF

EM

Zubehör Accessories

# Softsynchro®

**Basis-Montagevorrichtung**  
Basic assembly device



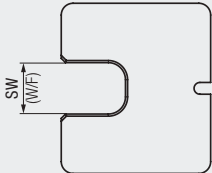
Für Spannzangen-Aufnahmen  
For collet holders

Softsynchro® Micro, Softsynchro® 0-4, Softsynchro® Slim, Softsynchro® Xtension

F3151186

# Softsynchro®

**Adapterplatten**  
Adapter plates



Für Spannzangen-Aufnahmen  
For collet holders

Schlüsselweite  
Width across flats

|                                              | SW<br>(W/F) |            |
|----------------------------------------------|-------------|------------|
| Softsynchro® Micro                           | 8           | F315050.02 |
| Softsynchro® 0                               | 14          | F315050.03 |
| Softsynchro® 0/Slim                          | 14          | F366050.01 |
| Softsynchro® 1                               | 19          | F315150.01 |
| Softsynchro® 1/Slim, Softsynchro® 1/Xtension | 17          | F366150.01 |
| Softsynchro® 3                               | 32          | F315350.01 |
| Softsynchro® 4                               | 41          | F315450.01 |



# Speedsynchro® Modular

Montagevorrichtung  
Assembly device



Für Spannzangen-Aufnahmen mit integrierter Übersetzung  
For collet holders with integrated transmission  
Speedsynchro® Modular

F3741909

# Speedsynchro® Mini

Montagevorrichtung  
Assembly device



Für Spannzangen-Aufnahmen mit integrierter Übersetzung  
For collet holders with integrated transmission  
Speedsynchro® Mini

F3720900

|                        |
|------------------------|
| Product<br>Finder      |
| Soft-<br>synchro       |
| Speed-<br>synchro      |
| KSN                    |
| MQL<br>MMS             |
| SFH                    |
| SWITCH-<br>MASTER      |
| HF                     |
| EM                     |
| Zubehör<br>Accessories |



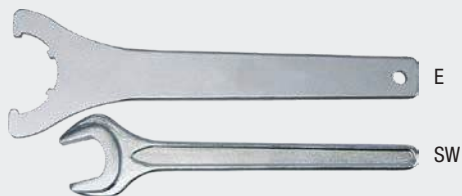
**Softsynchro® Micro, Softsynchro® 0**  
**Softsynchro® 0/Slim, Softsynchro® 1/Slim**  
**KSN 1/HD/ER**  
**EM 00-L/ER/IKZ - EM 03-L/ER/IKZ**



**Softsynchro® 1**



**Softsynchro® 3, Softsynchro® 4**  
**KSN 3/HD/ER**



**Softsynchro® 5**



**Hi-Q/ER 11, Hi-Q/ERC 20**



**Hi-Q/ERC 32, Hi-Q/ERC 40**



Spannschlüsselsätze für Spannzangen-Aufnahmen  
 Sets of clamping wrenches for collet holders

Bestandteile  
 Components

|                     |                                     |             |                   |
|---------------------|-------------------------------------|-------------|-------------------|
| <b>Softsynchro®</b> | Softsynchro® Micro                  | E8M / SW8   | <b>F315098.03</b> |
|                     | Softsynchro® 0, Softsynchro® 0/Slim | E11M / SW14 | <b>F315098.02</b> |
|                     | Softsynchro® 1                      | SW30 / SW19 | <b>F315198.02</b> |
|                     | Softsynchro® 1/Slim                 | E16M / SW17 | <b>F350198.01</b> |
|                     | Softsynchro® 3                      | E32 / SW32  | <b>F315398.01</b> |
| <b>KSN/HD/ER</b>    | Softsynchro® 4                      | E40 / SW41  | <b>F315498.01</b> |
|                     | KSN 1/HD/ER                         | E20M / SW24 | <b>F323198.01</b> |
|                     | KSN 3/HD/ER                         | E32 / SW34  | <b>F323398.01</b> |
| <b>EM-L/ER</b>      | EM 00-L/ER/IKZ                      | E11M / SW11 | <b>F350098.01</b> |
|                     | EM 01-L/ER/IKZ                      | E16M / SW17 | <b>F350198.01</b> |
|                     | EM 03-L/ER/IKZ                      | E25M / SW26 | <b>F350398.01</b> |

Spannschlüssel für Spannmuttern  
 Clamping wrenches for clamping nuts

Bestandteile  
 Components

|                |                 |      |                       |
|----------------|-----------------|------|-----------------------|
| <b>Hi-Q/ER</b> | Hi-Q/ERM 8      | E8M  | <b>QB002005.0080</b>  |
|                | Hi-Q/ERC 11     | SW17 | <b>QB002002.00170</b> |
|                | Hi-Q/ERM 11     | E11M | <b>QB002005.0110</b>  |
|                | Hi-Q/ERM 16     | E16M | <b>QB002005.0160</b>  |
|                | Hi-Q/ERC 20     | SW30 | <b>QB002002.00300</b> |
|                | Hi-Q/ERC 32     | E32  | <b>QB002003.0320</b>  |
|                | Hi-Q/ERC 40     | E40  | <b>QB002003.0400</b>  |
|                | Hi-Q/ERBC 50 EF | E50  | <b>F315598.02</b>     |



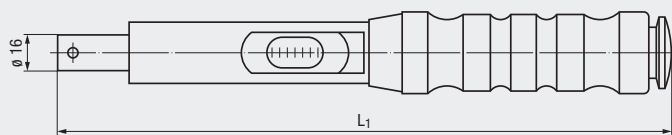


# HAZET TORCO-FIX

Drehmomentschlüssel  
Torque wrenches



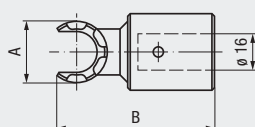
Abb. ähnlich  
Similar to



| Typ<br>Type   | Drehmoment<br>Torque<br>[Nm] | L <sub>1</sub> |                                                                                     |
|---------------|------------------------------|----------------|-------------------------------------------------------------------------------------|
| HAZET 6280    | 2 - 10                       | 183            |  |
| TORCO-FIX 0   | 5 - 25                       | 290            | F0908002                                                                            |
| TORCO-FIX I   | 10 - 50                      | 335            | F0908005                                                                            |
| TORCO-FIX II  | 40 - 200                     | 465            | F0908020                                                                            |
| TORCO-FIX III | 60 - 300                     | 565            | F0908060                                                                            |

## A-EM

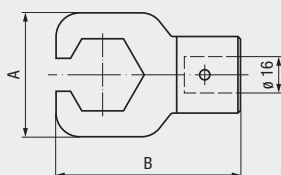
Aufsteckschlüssel  
Shell-type wrenches



| Typ<br>Type | Für Spannmutter<br>For clamping nut | TORCO-FIX | A    | B  |                                                                                     |
|-------------|-------------------------------------|-----------|------|----|-------------------------------------------------------------------------------------|
| A-E 8 M     | Hi-Q/ERM 8                          | 0         | 12,4 | 53 |  |
| A-E 11 M    | Hi-Q/ERMC 11, Hi-Q/ERM 11           | 0         | 16,8 | 54 | F0908500.AE11M                                                                      |
| A-E 16 M    | Hi-Q/ERMC 16                        | I         | 22,5 | 56 | F0908500.AE16M                                                                      |
| A-E 20 M    | Hi-Q/ERMC 20                        | I         | 29   | 68 | F0908500.AE20M                                                                      |
| A-E 25 M    | Hi-Q/ERMC 25                        | I         | 36   | 70 | F0908500.AE25M                                                                      |

## A-EP

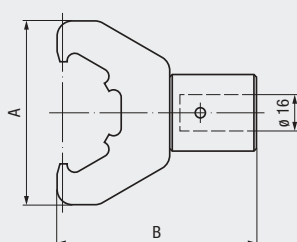
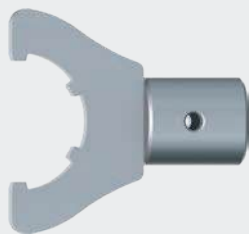
Aufsteckschlüssel  
Shell-type wrenches



| Typ<br>Type | Für Spannmutter<br>For clamping nut | TORCO-FIX | A  | B  |                                                                                       |
|-------------|-------------------------------------|-----------|----|----|---------------------------------------------------------------------------------------|
| A-E 11 P    | Hi-Q/ERC 11, Hi-Q/ER 11             | 0         | 32 | 61 |  |
| A-E 16 P    | Hi-Q/ERC 16                         | I         | 44 | 71 | F0908500.AE16P                                                                        |
| A-E 20 P    | Hi-Q/ERC 20                         | I         | 52 | 81 | F0908500.AE20P                                                                        |

## A-E

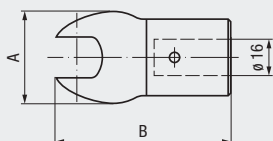
Aufsteckschlüssel  
Shell-type wrenches



| Typ<br>Type | Für Spannmutter<br>For clamping nut | TORCO-FIX | A   | B  |                                                                                       |
|-------------|-------------------------------------|-----------|-----|----|---------------------------------------------------------------------------------------|
| A-E 25      | Hi-Q/ERC 25                         | II, III   | 70  | 72 |  |
| A-E 32      | Hi-Q/ERC 32                         | II, III   | 80  | 72 | F0908500.AE32                                                                         |
| A-E 40      | Hi-Q/ERC 40                         | III       | 96  | 82 | F0908500.AE40                                                                         |
| A-E 50      | Hi-Q/ERBC 50                        | III       | 111 | 94 | F0908500.AE50                                                                         |

## A-SW

Aufsteckschlüssel  
Shell-type wrenches



| Typ<br>Type | Größe für<br>Spezial-Schaftverlängerung<br>Size for<br>special shank extension | HAZET /<br>TORCO-FIX | A    | B  |                                                                                       |
|-------------|--------------------------------------------------------------------------------|----------------------|------|----|---------------------------------------------------------------------------------------|
| A-SW 6      | 01                                                                             | HAZET                | 16,5 | 53 |  |
| A-SW 8      | 02                                                                             | HAZET                | 20,5 | 55 | F0908500.06                                                                           |
| A-SW 9      | 03, 04                                                                         | HAZET                | 20,5 | 55 | F0908500.08                                                                           |
| A-SW 12     | 05, 06                                                                         | HAZET                | 29   | 57 | F0908500.09                                                                           |
| A-SW 13     | 07                                                                             | HAZET                | 34,5 | 59 | F0908500.12                                                                           |
| A-SW 15     | 08, 09                                                                         | HAZET, 0             | 34,5 | 59 | F0908500.13                                                                           |
| A-SW 18     | 10, 11                                                                         | I                    | 41,5 | 59 | F0908500.15                                                                           |
| A-SW 22     | 12, 13                                                                         | I                    | 56   | 64 | F0908500.18                                                                           |
| A-SW 26     | 14                                                                             | II                   | 56   | 64 | F0908500.22                                                                           |
| A-SW 28     | 15                                                                             | II                   | 68   | 65 | F0908500.26                                                                           |
| A-SW 30     | 16                                                                             | II                   | 68   | 65 | F0908500.28                                                                           |
| A-SW 36     | 17                                                                             | II                   | 68   | 65 | F0908500.30                                                                           |
|             |                                                                                |                      |      |    | F0908500.36                                                                           |



Product  
Finder

Soft-  
synchro

Speed-  
synchro

KSN

MQL  
MMS

SFM

SWITCH-  
MASTER

HF

EM

Zubehör  
Accessories

## DEU

### Einarmiger Drehmomentschlüssel Single-armed torque wrench

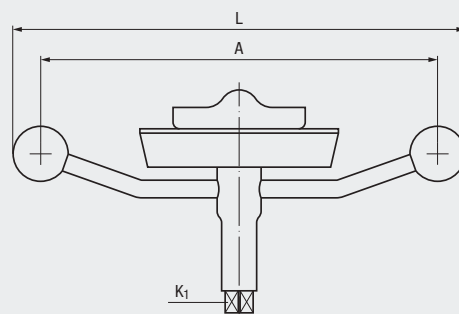


| Typ<br>Type | Für Einsatzgröße<br>For adapter size | Drehmoment<br>Torque<br>[Nm] | Messbereich<br>Measuring range | A    | L    | K <sub>1</sub> |          |
|-------------|--------------------------------------|------------------------------|--------------------------------|------|------|----------------|----------|
| DEU-00/1    | 00                                   | 0 - 6                        | M2 - M6 (Nr.2 - Nr.12)         | 220  | 260  | 1/4"           | F0900001 |
| DEU-00/1    | 00/01 (03)                           | 3 - 25                       | M6 - M12 (Nr.10 - 7/16)        | 200  | 245  | 3/8"           | F0900004 |
| DEU-10/1    | 03/04                                | 20 - 200                     | M12 - M27 (7/16 - 1")          | 410  | 500  | 1/2"           | F0901002 |
| DEU-20/1    | 04/05                                | 70 - 700                     | M24 - M52 (7/8 - 1 3/4)        | 1150 | 1260 | 3/4"           | F0902002 |



## DEU

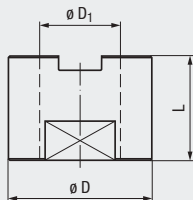
### Zweiarmiger Drehmomentschlüssel Double-armed torque wrench



| Typ<br>Type | Für Einsatzgröße<br>For adapter size | Drehmoment<br>Torque<br>[Nm] | Messbereich<br>Measuring range | A    | L    | K <sub>1</sub> |          |
|-------------|--------------------------------------|------------------------------|--------------------------------|------|------|----------------|----------|
| DEU-00      | 00/01 (03)                           | 3 - 23                       | M6 - M12 (Nr.10 - 7/16)        | 180  | 205  | 3/8"           | F0900000 |
| DEU-10      | 03/04                                | 20 - 180                     | M12 - M27 (7/16 - 1")          | 620  | 656  | 1/2"           | F0901000 |
| DEU-20      | 04/05                                | 70 - 700                     | M24 - M52 (7/8 - 1 3/4)        | 1150 | 1300 | 3/4"           | F0902000 |

## AEU

### Aufnahmekopf Adapter head

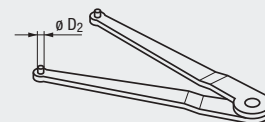


| Typ<br>Type | Für Einsatzgröße<br>For adapter size | ø D | ø D <sub>1</sub> | L  |          |
|-------------|--------------------------------------|-----|------------------|----|----------|
| AEU-00      | 00                                   | 25  | 13               | 25 | F0920000 |
| AEU-01      | 01                                   | 35  | 19               | 28 | F0921000 |
| AEU-03      | 03                                   | 55  | 31               | 40 | F0923000 |
| AEU-04      | 04                                   | 75  | 48               | 60 | F0924000 |
| AEU-05      | 05                                   | 100 | 60               | 70 | F0925000 |



## VS

### Stirnlochschlüssel Spanner with pins



| Typ<br>Type | Für Einsatzgröße<br>For adapter size | ø D <sub>2</sub> |          |
|-------------|--------------------------------------|------------------|----------|
| VS-00       | 00                                   | 2                | F0930000 |
| VS-01       | 01                                   | 2,5              | F0931000 |
| VS-03       | 03                                   | 4                | F0933000 |
| VS-04       | 04                                   | 5                | F0934000 |
| VS-05       | 05                                   | 6                | F0935000 |

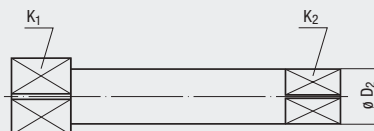


Der Aufnahmekopf dient zur Aufnahme der Schnellwechsel-Einsätze und wird mit seiner Schlüsselfläche in einen Schraubstock gespannt  
The adapter head serves for holding the quick-change adapters and features clamping flats for holding in a vise



# VEU

**Vierkantbolzen**  
Square pin



| Typ<br>Type   | Für Drehmomentschlüssel<br>For torque wrench | K <sub>1</sub><br>inch | Ø D <sub>2</sub><br>mm | K <sub>2</sub><br>mm |  |
|---------------|----------------------------------------------|------------------------|------------------------|----------------------|-------------------------------------------------------------------------------------|
| <b>VEU-00</b> | <b>DEU-00</b>                                | <b>3/8"</b>            | 2,5                    | 2,1                  | <b>F0910100</b>                                                                     |
|               |                                              |                        | 2,8                    | 2,1                  | <b>F0910101</b>                                                                     |
|               |                                              |                        | 3,5                    | 2,7                  | <b>F0910102</b>                                                                     |
|               |                                              |                        | 4                      | 3                    | <b>F0910103</b>                                                                     |
|               |                                              |                        | 4,5                    | 3,4                  | <b>F0910104</b>                                                                     |
|               |                                              |                        | 6                      | 4,9                  | <b>F0910106</b>                                                                     |
|               |                                              |                        | 7                      | 5,5                  | <b>F0910107</b>                                                                     |
|               |                                              |                        | 8                      | 6,2                  | <b>F0910108</b>                                                                     |
|               |                                              |                        | 9                      | 7                    | <b>F0910109</b>                                                                     |
|               |                                              |                        | 10                     | 8                    | <b>F0910110</b>                                                                     |
|               |                                              |                        | 11                     | 9                    | <b>F0910111</b>                                                                     |
|               |                                              |                        | 12                     | 9                    | <b>F0910112</b>                                                                     |
|               |                                              |                        | 14                     | 11                   | <b>F0910113</b>                                                                     |
|               |                                              |                        | 16                     | 12                   | <b>F0910114</b>                                                                     |
|               |                                              |                        | 18                     | 14,5                 | <b>F0910115</b>                                                                     |
| <b>VEU-10</b> | <b>DEU-10</b>                                | <b>1/2"</b>            | 4,5                    | 3,4                  | <b>F0911104</b>                                                                     |
|               |                                              |                        | 6                      | 4,9                  | <b>F0911106</b>                                                                     |
|               |                                              |                        | 7                      | 5,5                  | <b>F0911107</b>                                                                     |
|               |                                              |                        | 8                      | 6,2                  | <b>F0911108</b>                                                                     |
|               |                                              |                        | 9                      | 7                    | <b>F0911109</b>                                                                     |
|               |                                              |                        | 10                     | 8                    | <b>F0911110</b>                                                                     |
|               |                                              |                        | 11                     | 9                    | <b>F0911111</b>                                                                     |
|               |                                              |                        | 12                     | 9                    | <b>F0911112</b>                                                                     |
|               |                                              |                        | 14                     | 11                   | <b>F0911113</b>                                                                     |
|               |                                              |                        | 16                     | 12                   | <b>F0911114</b>                                                                     |
|               |                                              |                        | 18                     | 14,5                 | <b>F0911115</b>                                                                     |
|               |                                              |                        | 20                     | 16                   | <b>F0911116</b>                                                                     |
|               |                                              |                        | 22                     | 18                   | <b>F0911117</b>                                                                     |
|               |                                              |                        | 25                     | 20                   | <b>F0911118</b>                                                                     |
|               |                                              |                        | 28                     | 22                   | <b>F0911119</b>                                                                     |
|               |                                              |                        | 32                     | 24                   | <b>F0911120</b>                                                                     |
|               |                                              |                        | 36                     | 29                   | <b>F0911121</b>                                                                     |
| <b>VEU-20</b> | <b>DEU-20</b>                                | <b>3/4"</b>            | 18                     | 14,5                 | <b>F0912115</b>                                                                     |
|               |                                              |                        | 20                     | 16                   | <b>F0912116</b>                                                                     |
|               |                                              |                        | 22                     | 18                   | <b>F0912117</b>                                                                     |
|               |                                              |                        | 25                     | 20                   | <b>F0912118</b>                                                                     |
|               |                                              |                        | 28                     | 22                   | <b>F0912119</b>                                                                     |
|               |                                              |                        | 32                     | 24                   | <b>F0912120</b>                                                                     |
|               |                                              |                        | 36                     | 29                   | <b>F0912121</b>                                                                     |
|               |                                              |                        | 40                     | 32                   | <b>F0912122</b>                                                                     |
|               |                                              |                        | 45                     | 35                   | <b>F0912123</b>                                                                     |

Diese Vierkantbolzen stellen die Verbindung zwischen Drehmomentschlüssel und Schnellwechsel-Einsatz her, wobei das Vierkant K<sub>1</sub> in das Vierkant des Drehmomentschlüssels eingesteckt und der Schaft D<sub>2</sub> mit Vierkant K<sub>2</sub> in den Einsatz eingespannt wird.  
These square pins establish the connection between torque wrench and adapter: the square K<sub>1</sub> is inserted into the square seat of the torque wrench, and the shank end D<sub>2</sub> with square K<sub>2</sub> is clamped in the adapter.

Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFI

SWITCH-MASTER

HF

EM

Zubehör  
Accessories

|                     |
|---------------------|
| Product Finder      |
| Soft-synchro        |
| Speed-synchro       |
| KSN                 |
| MQL MMS             |
| SFM                 |
| SWITCH-MASTER       |
| HF                  |
| EM                  |
| Zubehör Accessories |

### Einstellen und Prüfen der Überlastkupplung von Schnellwechsel-Einsätzen der Typen EM-U, EM-UL und HF:

Grundsätzlich richtet sich das einzustellende Drehmoment nach

- Abmessung
- Geometrie und Beschichtung des Werkzeuges
- Zu bearbeitender Werkstoff
- Art und Qualität des Kühlschmierstoffes
- Kernlochdurchmesser

### Die Tabelle zeigt Richtwerte zum Gewindebohren in Stahl mit einer Zugfestigkeit von 600-800 N/mm<sup>2</sup>.

Eventuell müssen die Einstellwerte dem jeweiligen Bearbeitungsfall angepasst werden (z.B. beim Gewindeformen).

| Drehmoment<br>Torque | Gewindesystem<br>Thread system |        |        |      |       |         |             |             |              |      |
|----------------------|--------------------------------|--------|--------|------|-------|---------|-------------|-------------|--------------|------|
|                      | Nm                             | M      | UNC    | UNF  | BSW   | BSF     | G<br>(Whw.) | NPT<br>NPTF | Rc<br>(BSPT) | Pg   |
| 0,3                  | M2                             | Nr. 2  | Nr. 2  |      |       |         |             |             |              |      |
| 0,4                  | M2,5                           |        | Nr. 3  |      |       |         |             |             |              |      |
| 0,5                  |                                | Nr. 3  | Nr. 4  |      |       |         |             |             |              |      |
| 0,6                  | M3                             |        |        |      |       |         |             |             |              |      |
| 0,8                  |                                | Nr. 4  | Nr. 5  |      |       |         |             |             |              |      |
| 1                    | M3,5                           | Nr. 5  | Nr. 6  | 1/8  |       |         |             |             |              |      |
| 1,2                  |                                | Nr. 6  | Nr. 8  |      |       |         |             |             |              |      |
| 1,6                  | M4                             | Nr. 8  |        | 5/32 |       |         |             |             |              |      |
| 2                    |                                |        | Nr. 10 |      |       |         |             |             |              |      |
| 2,5                  | M5                             |        | Nr. 12 |      | 3/16  |         |             |             |              |      |
| 3                    |                                | Nr. 10 | 1/4    |      |       |         |             |             |              |      |
| 4                    |                                | Nr. 12 |        | 3/16 | 7/32  |         |             |             |              |      |
| 5                    | M6                             |        | 5/16   | 7/32 | 1/4   |         |             |             |              |      |
| 6                    |                                | 1/4    | 3/8    | 1/4  | 9/32  | G 1/8   |             |             |              |      |
| 8                    |                                |        |        |      | 5/16  |         |             |             |              |      |
| 10                   | M8                             | 5/16   | 7/16   | 5/16 |       |         |             |             |              |      |
| 12                   |                                |        | 1/2    |      | 3/8   |         |             |             |              |      |
| 16                   |                                | 3/8    |        | 3/8  |       |         | 1/16        | Rc 1/16     | Pg 7         |      |
| 18                   | M10                            |        | 9/16   |      | 7/16  | G 1/4   |             |             |              |      |
| 20                   |                                |        | 5/8    |      |       |         |             |             |              |      |
| 22                   |                                | 7/16   |        | 7/16 |       | G 3/8   |             |             |              | Pg 9 |
| 25                   | M12                            |        |        |      | 1/2   |         | 1/8         | Rc 1/8      | Pg 11        |      |
| 28                   |                                |        |        |      |       |         |             |             | Pg 13,5      |      |
| 32                   |                                | 1/2    | 3/4    | 1/2  | 9/16  |         |             |             | Pg 16        |      |
| 40                   |                                | 9/16   |        | 9/16 | 5/8   |         |             |             |              |      |
| 45                   | M14                            |        | 7/8    |      | 11/16 |         |             |             | Pg 21        |      |
| 50                   | M16                            | 5/8    |        | 5/8  |       | G 1/2   |             |             |              |      |
| 56                   |                                |        |        |      |       | G 5/8   |             | Rc 1/4      |              |      |
| 63                   |                                |        |        |      |       |         | 1/4         |             | Pg 29        |      |
| 70                   |                                | 3/4    | 1"     | 3/4  | 3/4   | G 3/4   |             |             |              |      |
| 80                   | M18                            |        | 1 1/8  |      | 13/16 | G 7/8   |             |             | Pg 36        |      |
| 90                   | M20                            |        | 1 1/4  |      | 7/8   |         | 3/8         | Rc 3/8      | Pg 42        |      |
| 100                  | M22                            | 7/8    | 1 3/8  | 7/8  |       |         |             |             | Pg 48        |      |
| 110                  |                                |        | 1 1/2  |      |       |         |             |             |              |      |
| 125                  |                                |        |        |      | 1"    |         |             |             |              |      |
| 140                  | M24                            | 1"     |        | 1"   |       | G 1"    |             |             |              |      |
| 160                  | M27                            |        |        |      |       | G 1 1/8 | 1/2         | Rc 1/2      |              |      |
| 180                  |                                |        |        |      | 1 1/8 | G 1 1/4 |             |             |              |      |
| 200                  |                                |        |        |      | 1 1/4 | G 1 3/8 | 3/4         | Rc 3/4      |              |      |

### Setting and checking of the overload clutch on quick-change adapters of types EM-U, EM-UL and HF:

Generally speaking, the torque to be set depends on

- Size
- Geometry and coating of the tool
- Workpiece material
- Type and quality of the coolant-lubricant
- Drilled hole diameter

### The table contains standard values for thread cutting in steel with a tensile strength of 600-800 N/mm<sup>2</sup>.

These values generally need to be adjusted to the individual work case (e.g. for cold-forming of threads).

| Drehmoment<br>Torque | Gewindesystem<br>Thread system |       |     |     |       |       |             |             |              |    |
|----------------------|--------------------------------|-------|-----|-----|-------|-------|-------------|-------------|--------------|----|
|                      | Nm                             | M     | UNC | UNF | BSW   | BSF   | G<br>(Whw.) | NPT<br>NPTF | Rc<br>(BSPT) | Pg |
| 220                  | M30                            | 1 1/8 |     |     | 1 1/8 |       | G 1 1/2     |             |              |    |
| 240                  | M33                            | 1 1/4 |     |     | 1 1/4 |       | G 1 3/4     |             |              |    |
| 260                  |                                |       |     |     |       | 1 3/8 | G 2"        |             |              |    |
| 280                  | M36                            |       |     |     |       |       |             |             |              |    |
| 300                  |                                |       |     |     |       | 1 1/2 | G 2 1/4     |             |              |    |
| 320                  | M39                            |       |     |     |       | 1 5/8 |             |             |              |    |
| 340                  |                                | 1 3/8 |     |     | 1 3/8 |       | G 2 1/2     | 1"          | Rc 1"        |    |
| 360                  |                                | 1 1/2 |     |     | 1 1/2 |       | G 2 3/4     |             |              |    |
| 400                  | M42                            |       |     |     |       |       | G 3"        |             |              |    |
| 420                  | M45                            |       |     |     |       |       | G 3 1/4     |             |              |    |
| 450                  |                                |       |     |     |       | 1 3/4 | G 3 1/2     | 1 1/4       | Rc 1 1/4     |    |
| 480                  |                                |       |     |     |       |       | G 3 3/4     |             |              |    |
| 500                  |                                |       |     |     |       | 2"    | G 4"        |             |              |    |
| 560                  | M48                            |       |     |     | 1 5/8 |       |             | 1 1/2       | Rc 1 1/2     |    |
| 630                  | M52                            | 1 3/4 |     |     | 1 3/4 |       |             |             |              |    |
| 710                  | M56                            |       |     |     |       | 2 1/4 |             | 2"          | Rc 2 "       |    |
| 800                  | M60                            |       |     |     | 1 7/8 | 2 1/2 |             |             |              |    |
| 900                  | M64                            |       |     |     |       | 2 3/4 |             |             |              |    |
| 1000                 | M68                            | 2"    |     |     | 2"    |       |             |             |              |    |
| 1100                 |                                | 2 1/4 |     |     | 2 1/4 | 3"    |             |             |              |    |
| 1170                 | M72                            |       |     |     |       |       |             |             |              |    |
| 1230                 | M76                            |       |     |     |       |       |             |             |              |    |
| 1300                 | M80                            |       |     |     |       |       |             |             |              |    |
| 1380                 | M85                            |       |     |     |       |       |             |             |              |    |
| 1400                 |                                | 2 1/2 |     |     | 2 1/2 |       |             | 2 1/2       | Rc 2 1/2     |    |
| 1460                 | M90                            |       |     |     |       |       |             |             |              |    |
| 1540                 | M95                            |       |     |     |       |       |             |             |              |    |
| 1620                 | M100                           |       |     |     |       |       |             |             |              |    |
| 1700                 | M105                           |       |     |     |       |       |             |             |              |    |
| 1780                 | M110                           |       |     |     |       |       |             |             |              |    |
| 1860                 | M115                           |       |     |     |       |       |             |             |              |    |
| 1940                 | M120                           |       |     |     |       |       |             |             |              |    |
| 2000                 |                                | 2 3/4 |     |     | 2 3/4 |       |             | 3"          | Rc 3"        |    |
| 2020                 | M125                           |       |     |     |       |       |             |             |              |    |
| 2110                 | M130                           |       |     |     |       |       |             |             |              |    |
| 2200                 |                                |       |     |     | 3"    |       |             |             |              |    |
| 2270                 | M140                           |       |     |     |       |       |             |             |              |    |
| 2430                 | M150                           |       |     |     |       |       |             |             |              |    |
| 2680                 | M160                           |       |     |     |       |       |             |             |              |    |





|          | R <sub>m</sub><br>[N/mm <sup>2</sup> ]                     | Rockwell<br>[HRC] | Mat.-Nr. | DIN               | AFNOR                          | BS                  | EN  |  |
|----------|------------------------------------------------------------|-------------------|----------|-------------------|--------------------------------|---------------------|-----|--|
| <b>P</b> | <b>Automatenstähle · Free-cutting steels</b>               |                   |          |                   |                                |                     |     |  |
| 1.1      | > 500                                                      |                   | 1.0711   | 9S20              | -                              | 220 M 07            | -   |  |
| 1.1      | 380 - 570                                                  |                   | 1.0715   | 9SMn28            | S 250                          | 230 M 07            | -   |  |
| 1.1      | 380 - 570                                                  |                   | 1.0718   | 9SMnPb28          | S 250 Pb                       | -                   | -   |  |
| 1.1      | 360 - 530                                                  |                   | 1.0721   | 10S20             | 10 F 1                         | 210 M 15            | -   |  |
| 1.1      | 360 - 530                                                  |                   | 1.0722   | 10SPb20           | 10 PbF 2                       | -                   | -   |  |
| 1.1      | 380 - 570                                                  |                   | 1.0723   | 15S20             | -                              | 210 A 15            | -   |  |
| 1.1      | 390 - 590                                                  |                   | 1.0736   | 9SMn36            | S 300                          | 240 M 07            | 1B  |  |
| 1.1      | 390 - 580                                                  |                   | 1.0737   | 9SMnPb36          | S 300 Pb                       | -                   | -   |  |
| 2.1      | 580 - 730                                                  |                   | 1.0726   | 35S20             | 35 MF 4                        | 212 M 36            | 8M  |  |
| 2.1      | 660 - 800                                                  |                   | 1.0727   | 45S20             | 45 MF 4                        | 212 M 44            | -   |  |
| 2.1      | 740 - 880                                                  |                   | 1.0728   | 60S20             | 60 MF 4                        | -                   | -   |  |
| 2.1      | 560 - 760                                                  |                   | 1.0757   | 46SPb20           | -                              | -                   | -   |  |
| <b>P</b> | <b>Baustähle legiert · Alloyed construction steels</b>     |                   |          |                   |                                |                     |     |  |
| 1.1      | 440 - 590                                                  |                   | 1.5415   | 15Mo3             | 15 D 3                         | 1501-240            | -   |  |
| 1.1      | 450 - 590                                                  |                   | 1.5423   | 16Mo5             | -                              | 1503-245-420        | -   |  |
| 2.1      | 490 - 640                                                  |                   | 1.5622   | 14Ni6             | 16 N 6                         | -                   | -   |  |
| 2.1      | 530 - 710                                                  |                   | 1.5680   | 12Ni19            | Z 18 N 5                       | -                   | -   |  |
| 2.1      | 450 - 660                                                  |                   | 1.7335   | 13CrMo4-4         | 15 CD 3.5                      | 1501-620 Gr. 27     | -   |  |
| 2.1      | 540 - 690                                                  |                   | 1.7337   | 16CrMo4-4         | 15 CD 4.5                      | 1501-620 Gr. 27     | -   |  |
| 2.1      | 480 - 630                                                  |                   | 1.7380   | 10CrMo9-10        | 10 CD 9.10                     | 1501-622 Gr. 31; 45 | -   |  |
| 2.1      | 490 - 640                                                  |                   | 1.7715   | 14MoV6-3          | 14 Mo 6                        | 1503-660-440        | -   |  |
| 3.1      | 700 - 850                                                  |                   | 1.7709   | 21CrMoV5-7        | -                              | -                   | -   |  |
| <b>P</b> | <b>Baustähle unlegiert / Unalloyed construction steels</b> |                   |          |                   |                                |                     |     |  |
| 1.1      | > 500                                                      |                   | 1.0037   | S235JR (St37-2)   | -                              | -                   | -   |  |
| 1.1      | 410 - 560                                                  |                   | 1.0044   | S275JR (St44-2)   | E 28-2                         | 4360-43 B           | -   |  |
| 1.1      | 340 - 470                                                  |                   | 1.0116   | S235J2G3 (St37-3) | E 24-3; E 24-4                 | 4360-40 C           | -   |  |
| 1.1      | 410 - 560                                                  |                   | 1.0144   | S275J2G3 (St44-3) | E 28-3; E 28-4                 | 4360-43 C           | -   |  |
| 1.1      | 340 - 470                                                  |                   | 1.0038   | S235JR (RSt37-2)  | E24-2 Ne                       | 4360 40C            | 1A  |  |
| 1.1      | 450 - 630                                                  |                   | 1.0577   | S235J2            | A 52 FP                        | -                   | -   |  |
| 1.1      | 430 - 580                                                  |                   | 1.0481   | 17Mn4             | -                              | -                   | -   |  |
| 1.1      | <540                                                       |                   | 1.0460   | C22G2             | -                              | P250GH              | -   |  |
| 1.1      | 450 - 630                                                  |                   | 1.0566   | P355NL1           | A510FP                         | 225-490A            | -   |  |
| 1.1      | 470 - 630                                                  |                   | 1.0571   | P355QH1           | P355QH1                        | P355QH1             | -   |  |
| 2.1      | 470 - 610                                                  |                   | 1.0050   | E295 (St50-2)     | A 50-2                         | 4360-50 B           | -   |  |
| 2.1      | 490 - 630                                                  |                   | 1.0570   | S355 (St52-3)     | E 36-3; E 36-4                 | 4360-50 B           | -   |  |
| 2.1      | 570 - 710                                                  |                   | 1.0060   | E335 (St60-2)     | A 60-2                         | 4360-SSE; SS        | -   |  |
| <b>P</b> | <b>Feinkornbaustahl · fine-grain structural steel</b>      |                   |          |                   |                                |                     |     |  |
| 3.1      | 770 - 940                                                  |                   | 1.8988   | S690QL            | K21650, K21640, K11856, K11646 | -                   | -   |  |
| <b>P</b> | <b>Stahlguss · Steel castings</b>                          |                   |          |                   |                                |                     |     |  |
| 1.1      | 586                                                        |                   | 1.1155   | GS-Ck25           | -                              | -                   | -   |  |
| 1.1      | 450 - 560                                                  |                   | 1.0446   | GS-45             | -                              | -                   | -   |  |
| 1.1      | 520 - 650                                                  |                   | 1.0552   | GS-52             | -                              | -                   | -   |  |
| 1.1      | 420 - 600                                                  |                   | 1.0619   | GS-C25            | -                              | -                   | -   |  |
| 1.1      | 450 - 600                                                  |                   | 1.1131   | GS-16Mn5          | -                              | -                   | -   |  |
| 2.1      | > 380                                                      |                   | 1.0420   | GS-38             | -                              | AM 1                | -   |  |
| 2.1      | 700 - 800                                                  |                   | 1.1118   | GS-24Mn6          | -                              | -                   | -   |  |
| 2.1      | 480 - 620                                                  |                   | 1.1120   | GS-20Mn5          | -                              | -                   | -   |  |
| 2.1      | > 500                                                      |                   | 1.5419   | GS-22Mo4          | -                              | 245                 | -   |  |
| 2.1      | > 500                                                      |                   | 1.5633   | GS-24Ni8          | -                              | -                   | -   |  |
| 2.1      | > 500                                                      |                   | 1.5681   | GS-10Ni19         | -                              | -                   | -   |  |
| 2.1      | > 500                                                      |                   | 1.6309   | GS-20MnMoNi5-5    | -                              | -                   | -   |  |
| 2.1      | 490 - 640                                                  |                   | 1.7357   | GS-17CrMo5-5      | -                              | 621                 | -   |  |
| 2.1      | > 500                                                      |                   | 1.7379   | GS-18CrMo9-10     | -                              | 622                 | -   |  |
| 2.1      | 600 - 730                                                  |                   | 1.0558   | GS-60             | -                              | -                   | -   |  |
| 2.1      | 650 - 880                                                  |                   | 1.1138   | GS-21Mn5          | -                              | -                   | -   |  |
| 3.1      | 840                                                        |                   | 1.1142   | GS-Ck16           | -                              | -                   | -   |  |
| 3.1      | < 850                                                      |                   | 1.6582   | GS-34CrNiMo6      | -                              | -                   | 24  |  |
| 3.1      | > 800                                                      |                   | 1.6748   | GS-40NiCrMo6-5-6  | -                              | -                   | -   |  |
| 3.1      | > 800                                                      |                   | 1.6750   | GS-20NiCrMo3-7    | -                              | -                   | -   |  |
| 3.1      | > 800                                                      |                   | 1.6760   | GS-22NiMoCr5-6    | -                              | -                   | -   |  |
| <b>P</b> | <b>Einsatzstähle / Case-hardening steels</b>               |                   |          |                   |                                |                     |     |  |
| 1.1      | < 500                                                      |                   | 1.0301   | C10               | AF 34 C 10; XC 10              | 045 M 10            | -   |  |
| 1.1      | < 500                                                      |                   | 1.0401   | C15               | AF 34 C 12; XC 18              | 080 M 15            | -   |  |
| 1.1      | < 500                                                      |                   | 1.0402   | C22               | CC20                           | 050 A 20            | 2C  |  |
| 1.1      | < 500                                                      |                   | 1.1121   | CK10              | XC 10                          | 045 M 10            | -   |  |
| 1.1      | < 500                                                      |                   | 1.1141   | CK15              | XC 15; XC 18                   | 080 M 15            | 32C |  |
| 1.1      | < 500                                                      |                   | 1.7012   | 13Cr2             | -                              | -                   | -   |  |
| 2.1      | 500 - 700                                                  |                   | 1.7015   | 15Cr3             | 12 C 3                         | 523 M 15            | -   |  |
| 2.1      | 500 - 700                                                  |                   | 1.5732   | 14NiCr10          | 14 NC 11                       | -                   | -   |  |
| 2.1      | 500 - 700                                                  | < 24              | 1.7311   | 20CrMo2           | -                              | -                   | -   |  |
| 3.1      | 700 - 850                                                  | < 24              | 1.5752   | 14NiCr14          | 12 NC 15                       | 655 M 13            | 36A |  |
| 3.1      | 700 - 850                                                  | < 24              | 1.5860   | 14NiCr18          | -                              | -                   | -   |  |
| 3.1      | 700 - 850                                                  | < 24              | 1.5919   | 15CrNi6           | 16 NC 6                        | S 107               | -   |  |
| 3.1      | 700 - 850                                                  | < 24              | 1.5920   | 18NiCr8           | 20 NC 6                        | -                   | -   |  |
| 3.1      | 700 - 850                                                  | < 24              | 1.6523   | 21NiCrMo2         | 20 NCD 2                       | 805 M 20            | 362 |  |

|  | <br>UNI | <br>UNE | <br>JIS | <br>SIS | <br>AISI/SAE/ASTM |     |
|--|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-----|
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | P   |
|  | CF 9 S 22                                                                                | -                                                                                        | SUM 21                                                                                   | -                                                                                         | 1212                                                                                                 | 1.1 |
|  | CF 9 SMn 28                                                                              | 11SMn28                                                                                  | SUM 22                                                                                   | 1912                                                                                      | 1213                                                                                                 | 1.1 |
|  | CF 9 SMnPb 2                                                                             | 11SMnPb28                                                                                | SUM 22 L                                                                                 | 1914                                                                                      | 12 L 13                                                                                              | 1.1 |
|  | CF 10 S 20                                                                               | 10S20                                                                                    | -                                                                                        | -                                                                                         | 1108                                                                                                 | 1.1 |
|  | CF 10 SPb 20                                                                             | 10SPb20                                                                                  | -                                                                                        | -                                                                                         | 11 L 08                                                                                              | 1.1 |
|  | -                                                                                        | F.210.F                                                                                  | SUM 32                                                                                   | 1922                                                                                      | -                                                                                                    | 1.1 |
|  | CF 9 SMn 36                                                                              | 12SMn36                                                                                  | -                                                                                        | -                                                                                         | 1215                                                                                                 | 1.1 |
|  | CF 9 SMnPb 36                                                                            | 12SMnPb36                                                                                | -                                                                                        | 1926                                                                                      | 12 L 14                                                                                              | 1.1 |
|  | -                                                                                        | F210G                                                                                    | -                                                                                        | 1957                                                                                      | 1140                                                                                                 | 2.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | 1973                                                                                      | 1146                                                                                                 | 2.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 2.1 |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 2.1 |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | P   |
|  | 16 Mo 3                                                                                  | 16Mo3                                                                                    | -                                                                                        | 2912                                                                                      | A 204; Gr. A                                                                                         | 1.1 |
|  | 16 Mo 5                                                                                  | 16Mo5                                                                                    | -                                                                                        | -                                                                                         | 4520                                                                                                 | 1.1 |
|  | 14 Ni 6                                                                                  | 15Ni6                                                                                    | -                                                                                        | -                                                                                         | A 350-LF 5                                                                                           | 2.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | 2515                                                                                                 | 2.1 |
|  | 14 CrMo 4 5                                                                              | 14CrMo45                                                                                 | -                                                                                        | 2216                                                                                      | A 182-F11; F12                                                                                       | 2.1 |
|  | 15 CrMo 4 5                                                                              | -                                                                                        | -                                                                                        | 2216                                                                                      | A 387; Gr. 12 C                                                                                      | 2.1 |
|  | 12 CrMo 9 10                                                                             | -                                                                                        | -                                                                                        | 2218                                                                                      | A 182-F22                                                                                            | 2.1 |
|  | -                                                                                        | 13MoCrV6                                                                                 | -                                                                                        | -                                                                                         | -                                                                                                    | 2.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1 |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | P   |
|  | -                                                                                        | -                                                                                        | STKM 12 C                                                                                | -                                                                                         | -                                                                                                    | 1.1 |
|  | Fe 430 B FN                                                                              | -                                                                                        | SM 41 B                                                                                  | 1412                                                                                      | A 570; Gr. 40                                                                                        | 1.1 |
|  | Fe 360 D FF                                                                              | -                                                                                        | -                                                                                        | 1312; 1313                                                                                | A 573; Gr. 58                                                                                        | 1.1 |
|  | Fe 430 D FF                                                                              | -                                                                                        | SM 41 C                                                                                  | 1412; 1414                                                                                | A 573; Gr. 70                                                                                        | 1.1 |
|  | -                                                                                        | -                                                                                        | STKM 12A;C                                                                               | 1311                                                                                      | A570.36                                                                                              | 1.1 |
|  |                                                                                          | A52RBII                                                                                  | G3135                                                                                    |                                                                                           | A738                                                                                                 | 1.1 |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 1.1 |
|  |                                                                                          |                                                                                          | STK500                                                                                   |                                                                                           |                                                                                                      | 1.1 |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 1.1 |
|  | Fe 490                                                                                   | -                                                                                        | SS 50                                                                                    | 2172                                                                                      | A 570; Gr. 50                                                                                        | 2.1 |
|  | Fe 510 B; C; D                                                                           | -                                                                                        | SM 50 YA                                                                                 | 2132                                                                                      | -                                                                                                    | 2.1 |
|  | Fe 590; Fe 600                                                                           | -                                                                                        | SM 58                                                                                    | -                                                                                         | -                                                                                                    | 2.1 |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | P   |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 3.1 |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | P   |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 1.1 |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 1.1 |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 1.1 |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 1.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | A 27                                                                                                 | 2.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 2.1 |
|  | -                                                                                        | F.8310                                                                                   | -                                                                                        | -                                                                                         | -                                                                                                    | 2.1 |
|  | -                                                                                        | -                                                                                        | SCPH 11                                                                                  | -                                                                                         | -                                                                                                    | 2.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 2.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | A 757                                                                                                | 2.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 2.1 |
|  | -                                                                                        | F-8383                                                                                   | SCPH 21                                                                                  | -                                                                                         | A 217                                                                                                | 2.1 |
|  | -                                                                                        | -                                                                                        | SCPH 32                                                                                  | -                                                                                         | -                                                                                                    | 2.1 |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 2.1 |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 3.1 |
|  | -                                                                                        | -                                                                                        | SNCM 9                                                                                   | 2541                                                                                      | -                                                                                                    | 3.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1 |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | P   |
|  | C 10                                                                                     | -                                                                                        | S 10 C                                                                                   | -                                                                                         | 1010                                                                                                 | 1.1 |
|  | C 15; C 16                                                                               | F.111                                                                                    | -                                                                                        | 1350                                                                                      | 1015                                                                                                 | 1.1 |
|  | C20;C21                                                                                  | F.112                                                                                    | -                                                                                        | 1450                                                                                      | 1020                                                                                                 | 1.1 |
|  | C 10                                                                                     | -                                                                                        | S 10 C; S 9 CK                                                                           | 1265                                                                                      | 1010                                                                                                 | 1.1 |
|  | C 15; C 16                                                                               | C15K                                                                                     | S 15 C; S 15 CK                                                                          | 1370                                                                                      | 1015                                                                                                 | 1.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 1.1 |
|  | -                                                                                        | -                                                                                        | SCR 415 (H)                                                                              | -                                                                                         | 5015                                                                                                 | 2.1 |
|  | 16 NiCr 11                                                                               | 15NiCr11                                                                                 | SNC 415 (H)                                                                              | -                                                                                         | 3415                                                                                                 | 2.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 2.1 |
|  | -                                                                                        | -                                                                                        | SNC 815 (H)                                                                              | -                                                                                         | 3310; 9314                                                                                           | 3.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1 |
|  | 16 CrNi 4                                                                                | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1 |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1 |
|  | 20 NiCrMo 2                                                                              | 20NiCrMo2                                                                                | SNCM 220 (H)                                                                             | 2506                                                                                      | 8620                                                                                                 | 3.1 |



|                                                                   | R <sub>m</sub><br>[N/mm <sup>2</sup> ] | Rockwell<br>[HRC] | Mat.-Nr.    | DIN         | AFNOR      | BS           | EN   |  |
|-------------------------------------------------------------------|----------------------------------------|-------------------|-------------|-------------|------------|--------------|------|--|
| 3.1                                                               | 700 - 850                              | < 24              | 1.6587      | 17CrNiMo6   | 18 NCD 6   | 820 A 16     | -    |  |
| 3.1                                                               | 700 - 850                              | < 24              | 1.7131      | 16MnCr5     | 16 MC 5    | 527 M 17     | -    |  |
| 3.1                                                               | 700 - 850                              | < 24              | 1.7139      | 16MnCrS5    | -          | -            | -    |  |
| 3.1                                                               | 700 - 850                              | < 24              | 1.7147      | 20MnCr5     | 20 MC 5    | -            | -    |  |
| 3.1                                                               | 700 - 850                              | < 24              | 1.7149      | 20MnCrS5    | -          | -            | -    |  |
| 3.1                                                               | 700 - 850                              | < 24              | 1.7262      | 15CrMo5     | 12 CD 4    | -            | -    |  |
| 3.1                                                               | 700 - 850                              | < 24              | 1.7264      | 20CrMo5     | 18 CD 4    | -            | -    |  |
| 3.1                                                               | 700 - 850                              | < 24              | 1.7271      | 23CrMoB3-3  | -          | -            | -    |  |
| 3.1                                                               | 700 - 850                              | < 24              | 1.7321      | 20MoCr4     | -          | -            | -    |  |
| 3.1                                                               | 700 - 850                              | < 24              | 1.7323      | 20MoCrS4    | -          | -            | -    |  |
| 3.1                                                               | 700 - 850                              | < 24              | 1.7325      | 25MoCr4     | -          | -            | -    |  |
| 3.1                                                               | 836                                    |                   | Böhler E108 |             | 16NCD17    | S82; S156    | 2767 |  |
| <b>P Federstähle · Spring steels</b>                              |                                        |                   |             |             |            |              |      |  |
| 3.1                                                               | < 850                                  | < 24              | 1.0904      | 55Si7       | 55 S 7     | 250 A 53     | 45   |  |
| 3.1                                                               | < 850                                  | < 24              | 1.0961      | 60SiCr7     | 60 SC 7    | -            | -    |  |
| 3.1                                                               | < 850                                  | < 24              | 1.1231      | CK67        | XC 68      | 060 A 67     | -    |  |
| 3.1                                                               | < 850                                  | < 24              | 1.1248      | CK75        | XC 75      | 060 A 78     | -    |  |
| 3.1                                                               | < 850                                  | < 24              | 1.1274      | CK101       | XC 100     | 060 A 96     | -    |  |
| 3.1                                                               | < 850                                  | < 24              | 1.7103      | 67SiCr5     | -          | -            | -    |  |
| 3.1                                                               | < 850                                  | < 24              | 1.7176      | 55Cr3       | 55 C 3     | 527 A 60     | 48   |  |
| 3.1                                                               | < 850                                  | < 24              | 1.8159      | 50CrV4      | 50 CV 4    | 735 A 50     | 47   |  |
| 3.1                                                               | < 850                                  | < 24              | 1.5026      | 55 Si 7     | 55 S 7     | 250 A 53     | -    |  |
| <b>P Vergütungsstähle legiert · Alloyed heat-treatable steels</b> |                                        |                   |             |             |            |              |      |  |
| 2.1                                                               | < 800                                  | < 21              | 1.1133      | 20Mn5       | 20 M 5     | 120 M 19     | -    |  |
| 2.1                                                               | < 800                                  | < 21              | 1.7735      | 14CrMoV6-9  | 15 CDV 6   | -            | -    |  |
| 2.1                                                               | < 800                                  | < 21              | 1.3505      | 100Cr6      | 100 C 6    | 534 A 99     | 31   |  |
| 2.1                                                               | < 800                                  | < 21              | 1.5120      | 38MnSi4     | -          | -            | -    |  |
| 2.1                                                               | < 800                                  | < 21              | 1.5121      | 46MnSi4     | -          | -            | -    |  |
| 2.1                                                               | < 800                                  | < 21              | 1.5141      | 53MnSi4     | -          | -            | -    |  |
| 2.1                                                               | < 800                                  | < 21              | 1.5710      | 36NiCr6     | 35 NC 6    | 640 A 35     | 111A |  |
| 2.1                                                               | < 800                                  | < 21              | 1.6546      | 40NiCrMo2-2 | 40 NCD 2   | 311-Type7    | -    |  |
| 2.1                                                               | < 800                                  | < 21              | 1.6565      | 40NiCrMo6   | -          | 311-Type6    | -    |  |
| 2.1                                                               | < 800                                  | < 21              | 1.7003      | 38Cr2       | 38 C 2     | -            | -    |  |
| 2.1                                                               | < 800                                  | < 21              | 1.7006      | 46Cr2       | 42 C 2     | -            | -    |  |
| 2.1                                                               | < 800                                  | < 21              | 1.7020      | 32Cr2       | -          | -            | -    |  |
| 2.1                                                               | < 800                                  | < 21              | 1.7030      | 28Cr4       | -          | 530 A 30     | -    |  |
| 2.1                                                               | < 800                                  | < 21              | 1.7033      | 34Cr4       | 32 C 4     | 530 A 32     | 18B  |  |
| 2.1                                                               | < 800                                  | < 21              | 1.7218      | 25CrMo4     | 25 CD 4 S  | 1717 CDS 110 | -    |  |
| 2.1                                                               | < 800                                  | < 21              | 1.7220      | 34CrMo4     | 35 CD 4    | 708 A 37     | 19B  |  |
| 2.1                                                               | < 800                                  | < 21              | 1.7223      | 41CrMo4     | 42 CD 4 TS | 708 M 40     | 19A  |  |
| 2.1                                                               | < 800                                  | < 21              | 1.7225      | 42CrMo4     | 42 CD 4 TS | 708 M 40     | 19A  |  |
| 2.1                                                               | < 800                                  | < 21              | 1.7228      | 50CrMo4     | -          | 708 A 47     | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.7182      | 27MnCrB5-2  | -          | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.5532      | 38MnB5      | -          | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.1157      | 40Mn4       | 35 M 5     | 150 M 36     | 15   |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.1165      | 30Mn5       | 35 M 5     | 120 M 36     | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.1167      | 36Mn5       | 40 M 5     | 150 M 36     | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.1170      | 28Mn5       | 20 M 5     | 150 M 28     | 14A  |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.3561      | 44Cr2       | -          | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.3563      | 43CrMo4     | -          | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.3565      | 48CrMo4     | -          | 817 M 40     | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.5120      | 38MnSi4     | -          | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.5121      | 46MnSi4     | -          | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.5122      | 37MnSi4     | -          | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.5131      | 50MnSi4     | -          | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.5141      | 53MnSi4     | -          | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.5223      | 42MnV7      | -          | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.5710      | 36NiCr6     | 35 NC 6    | 640 A 35     | 111A |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.5736      | 36NiCr10    | 30 NC 11   | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.5755      | 31NiCr14    | 18 NC 13   | 653 M 31     | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.6511      | 36CrNiMo4   | 40 NCD 3   | 816 M 40     | 110  |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.6513      | 28NiCrMo4   | -          | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.7003      | 38Cr2       | 38 C 2     | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.7006      | 46Cr2       | 42 C 2     | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.7030      | 28Cr4       | -          | 530 A 30     | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.7033      | 34Cr4       | 32 C 4     | 530 A 32     | 18B  |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.7034      | 37Cr4       | 38 C 4     | 530 A 36     | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.7035      | 41Cr4       | 42 C 4     | 530 M 40     | 18   |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.7218      | 25CrMo4     | 25 CD 4 S  | 1717 CDS 110 | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.7220      | 34CrMo4     | 35 CD 4    | 708 A 37     | 19B  |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.7223      | 41CrMo4     | 42 CD 4 TS | 708 M 40     | 19A  |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.7225      | 42CrMo4     | 42 CD 4 TS | 708 M 40     | 19A  |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.7228      | 50CrMo4     | -          | 708 A 47     | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.7561      | 42CrV6      | -          | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 21 - 30         | 1.7735      | 14CrMoV6-9  | 15 CDV 6   | -            | -    |  |
| 3.1                                                               | > 800 - 1000                           | > 24 - 30         | 1.8159      | 50CrV4      | 50 CV 4    | 735 A 50     | 47   |  |

**EMUGE**  
**FRANKEN**

|                                                                       | R <sub>m</sub><br>[N/mm <sup>2</sup> ] | Rockwell<br>[HRC] | Mat.-Nr.                   | DIN          | AFNOR           | BS                     | EN          |  |
|-----------------------------------------------------------------------|----------------------------------------|-------------------|----------------------------|--------------|-----------------|------------------------|-------------|--|
| 3.1                                                                   | 800 - 1000                             |                   | 1.3401                     | X120Mn12     |                 |                        |             |  |
| 4.1                                                                   | 800 - 1300                             |                   | 1.7227                     | 42CrMoS4     | 42C04; 42CD4U   | 708A42; 708H37; 708M40 | EN19; EN19A |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.3563                     | 43CrMo4      | -               | -                      | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.3565                     | 48CrMo4      | -               | 817 M 40               | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.5120                     | 38MnSi4      | -               | -                      | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.5121                     | 46MnSi4      | -               | -                      | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.5122                     | 37MnSi4      | -               | -                      | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.5223                     | 42MnV7       | -               | -                      | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.5710                     | 36NiCr6      | 35 NC 6         | 640 A 35               | 111A        |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.5736                     | 36NiCr10     | 30 NC 11        | -                      | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.5864                     | 35NiCr18     | -               | -                      | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.6511                     | 36CrNiMo4    | 40 NCD 3        | 816 M 40               | 110         |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.6580                     | 30CrNiMo8    | 30 CND 8        | 823 M 30               | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.6582                     | 34CrNiMo6    | 35 NCD 6        | 817 M 40               | 24          |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.7033                     | 34Cr4        | 32 C 4          | 530 A 32               | 18B         |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.7034                     | 37Cr4        | 38 C 4          | 530 A 36               | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.7035                     | 41Cr4        | 42 C 4          | 530 M 40               | 18          |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.7045                     | 42Cr4        | 42 C 4 TS       | 530 A 40               | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.7218                     | 25CrMo4      | 25 CD 4 S       | 1717 CDS 110           | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.7220                     | 34CrMo4      | 35 CD 4         | 708 A 37               | 19B         |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.7223                     | 41CrMo4      | 42 CD 4 TS      | 708 M 40               | 19A         |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.7225                     | 42CrMo4      | 42 CD 4 TS      | 708 M 40               | 19A         |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.7228                     | 50CrMo4      | -               | 708 A 47               | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.7361                     | 32CrMo12     | 30 CD 12        | 722 M 24               | 40B         |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.7561                     | 42CrV6       | -               | -                      | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.7707                     | 30CrMoV9     | -               | -                      | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.7735                     | 14CrMoV6-9   | 15 CDV 6        | -                      | -           |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.8159                     | 50CrV4       | 50 CV 4         | 735 A 50               | 47          |  |
| 5.1                                                                   | > 1000 - 1300                          | > 30 - 40         | 1.8161                     | 58CrV4       | -               | -                      | -           |  |
| <b>P Vergütungsstähle unlegiert · Unalloyed heat-treatable steels</b> |                                        |                   |                            |              |                 |                        |             |  |
| 2.1                                                                   | < 800                                  | < 21              | 1.0402                     | C22          | AF 42 C 20      | 050 A 20               | 2D          |  |
| 2.1                                                                   | < 800                                  | < 21              | 1.0406                     | C25          | AF 50 C 30      | 070 M 26               | -           |  |
| 2.1                                                                   | < 800                                  | < 21              | 1.0501                     | C35          | AF 55 C 35      | 060 A 35               | -           |  |
| 2.1                                                                   | < 800                                  | < 21              | 1.0503                     | C45          | AF 65 C 45      | 080 M 46               | -           |  |
| 2.1                                                                   | < 800                                  | < 21              | 1.0511                     | C40          | AF 60 C 40      | -                      | -           |  |
| 2.1                                                                   | < 800                                  | < 21              | 1.0528                     | C30          | -               | -                      | -           |  |
| 2.1                                                                   | < 800                                  | < 21              | 1.1151                     | Ck22         | XC 25; XC 18    | 050 A 20               | -           |  |
| 2.1                                                                   | < 800                                  | < 21              | 1.1158                     | Ck25         | XC 25           | 070 M 26               | -           |  |
| 2.1                                                                   | < 800                                  | < 21              | 1.1178                     | Ck30         | -               | -                      | -           |  |
| 2.1                                                                   | < 800                                  | < 21              | 1.1181                     | Ck35         | XC 38 H1; XC 32 | 080 M 36               | -           |  |
| 2.1                                                                   | < 800                                  | < 21              | 1.1186                     | Ck40         | XC 42 H1        | 080 M 40               | -           |  |
| 2.1                                                                   | < 800                                  | < 21              | 1.1191                     | Ck45         | XC 42           | 080 M 46               | -           |  |
| 2.1                                                                   | < 800                                  | < 21              | 1.1201                     | C45R         | XC42H1          | 080M46                 | -           |  |
| 3.1                                                                   | > 800 - 1000                           | > 21 - 30         | 1.0535                     | C55          | -               | 070 M 55               | -           |  |
| 3.1                                                                   | > 800 - 1000                           | > 21 - 30         | 1.0540                     | C50          | -               | -                      | -           |  |
| 3.1                                                                   | > 800 - 1000                           | > 21 - 30         | 1.0601                     | C60          | CC 55           | 080 A 62               | 43D         |  |
| 3.1                                                                   | > 800 - 1000                           | > 21 - 30         | 1.1203                     | Ck55         | XC 55           | 070 M 55               | -           |  |
| 3.1                                                                   | > 800 - 1000                           | > 21 - 30         | 1.1206                     | Ck50         | XC 48 H1        | 080 M 50               | -           |  |
| 3.1                                                                   | > 800 - 1000                           | > 21 - 30         | 1.1221                     | Ck60         | XC 60           | 080 A 62               | 43D         |  |
| <b>P Kaltarbeitsstähle · Cold work steels</b>                         |                                        |                   |                            |              |                 |                        |             |  |
| 2.1                                                                   | 770                                    |                   | CP2M                       |              |                 |                        |             |  |
| 2.1                                                                   | 785                                    |                   | Vanadis 4 Extra SuperClean |              |                 |                        |             |  |
| 2.1                                                                   | 740                                    |                   | 1.2369                     | 81MoCrV4216  |                 |                        |             |  |
| 2.1                                                                   | 800                                    |                   | CP72 Plus                  |              |                 |                        |             |  |
| 3.1                                                                   | 760                                    | 19                | 1.2067                     | 100Cr6       | Y 100 C 6       | BL 3                   | -           |  |
| 3.1                                                                   | 760                                    | 19                | 1.2103                     | 58SiCr8      | -               | -                      | -           |  |
| 3.1                                                                   | 760                                    | 19                | 1.2108                     | 90CrSi5      | -               | -                      | -           |  |
| 3.1                                                                   | 720                                    |                   | 1.2162                     | 21MnCr5      | 20 NC 5         | -                      | -           |  |
| 3.1                                                                   | 730                                    |                   | 1.2210                     | 115CrV3      | 100 C 3         | -                      | -           |  |
| 3.1                                                                   | 730                                    |                   | 1.2330                     | 35CrMo4      | 34 CD 4         | 708 A 37               | -           |  |
| 3.1                                                                   | 750                                    |                   | 1.2332                     | 47CrMo4      | 42 CD 4         | 709 M 40               | -           |  |
| 3.1                                                                   | 760                                    | 19                | 1.2419                     | 105WCr6      | 105 WC 13       | -                      | -           |  |
| 3.1                                                                   | 720                                    |                   | 1.2510                     | 100MnCrW4    | 90 MWCV 5       | BO 1                   | -           |  |
| 3.1                                                                   | 730                                    |                   | 1.2516                     | 120W4        | 110 WC 20       | BF 1                   | -           |  |
| 3.1                                                                   | 750                                    |                   | 1.2542                     | 45WCrV7      | -               | BS 1                   | -           |  |
| 3.1                                                                   | 750                                    |                   | 1.2550                     | 60WCrV7      | 55 WC 20        | -                      | -           |  |
| 3.1                                                                   | 830                                    | 23                | 1.2721                     | 50NiCr13     | -               | -                      | -           |  |
| 3.1                                                                   | 670                                    |                   | 1.2735                     | 15NiCr14     | 10 NC 12        | -                      | -           |  |
| 3.1                                                                   | 710                                    |                   | 1.2762                     | 75CrMoNiW6-7 | -               | -                      | -           |  |
| 3.1                                                                   | 750                                    |                   | 1.2826                     | 60MnSiCr4    | -               | -                      | -           |  |
| 3.1                                                                   | 760                                    | 19                | 1.2833                     | 100V1        | Y1 105 V        | BW 2                   | -           |  |
| 3.1                                                                   | 730                                    |                   | 1.2842                     | 90MnCrV8     | 90 MV 8         | BO 2                   | -           |  |
| 3.1                                                                   | 830                                    | 23                | 1.2080                     | X210Cr12     | Z 200 C 12      | BD 3                   | -           |  |
| 3.1                                                                   | 380                                    |                   | 1.2341                     | X6CrMo4      | -               | -                      | -           |  |
| 3.1                                                                   | 760                                    | 19                | 1.2363                     | X100CrMoV5-1 | Z 100 CDV 5     | BA 2                   | -           |  |
| 3.1                                                                   | 640 - 840                              |                   | 1.5662                     | X8Ni9        | 9 Ni            | 1501.509               | -           |  |

|                   | <br>UNI | <br>UNE | <br>JIS | <br>SIS | <br>AISI/SAE/ASTM |          |
|-------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|----------|
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | A128                                                                                                 | 3.1      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | A331; A505; A519; A646                                                                               | 4.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 5.1      |
| -                 | -                                                                                        | -                                                                                        | SNC 836                                                                                  | -                                                                                         | -                                                                                                    | 5.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 5.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 5.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 5.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 5.1      |
| -                 | -                                                                                        | -                                                                                        | SNC 236                                                                                  | -                                                                                         | 3135                                                                                                 | 5.1      |
| 35 NiCr 9         | -                                                                                        | -                                                                                        | SNC 631 (H)                                                                              | -                                                                                         | 3435                                                                                                 | 5.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 5.1      |
| 38 NiCrMo 4 (KB)  | 33NiCrMo4                                                                                | -                                                                                        | SNC 836                                                                                  | -                                                                                         | 9840                                                                                                 | 5.1      |
| 30 NiCrMo 8       | -                                                                                        | -                                                                                        | SNCM 431                                                                                 | -                                                                                         | -                                                                                                    | 5.1      |
| 35 NiCrMo 6 (KW)  | -                                                                                        | -                                                                                        | SNCM 447                                                                                 | 2541                                                                                      | 4340                                                                                                 | 5.1      |
| 34 Cr 4 (KB)      | 35Cr4                                                                                    | -                                                                                        | SCr 430 (H)                                                                              | -                                                                                         | 5132                                                                                                 | 5.1      |
| 38 Cr 4           | -                                                                                        | -                                                                                        | SCr 435 (H)                                                                              | -                                                                                         | 5135                                                                                                 | 5.1      |
| 41 Cr 4           | 42Cr4                                                                                    | -                                                                                        | SCr 440 (H)                                                                              | -                                                                                         | 5140                                                                                                 | 5.1      |
| 41 Cr 4           | 42Cr4                                                                                    | -                                                                                        | SCr 440                                                                                  | 2245                                                                                      | 5140                                                                                                 | 5.1      |
| 25 CrMo 4 (KB)    | 55Cr3                                                                                    | -                                                                                        | SCM 420; SCM 430                                                                         | 2225                                                                                      | 4130                                                                                                 | 5.1      |
| 35 CrMo4          | 34CrMo4                                                                                  | -                                                                                        | SCM 432; SCCrM 3                                                                         | 2234                                                                                      | 4135; 4137                                                                                           | 5.1      |
| 41 CrMo 4         | 42CrMo4                                                                                  | -                                                                                        | SCM 440                                                                                  | 2244                                                                                      | 4142; 4140                                                                                           | 5.1      |
| 41 CrMo 4         | F-1252                                                                                   | -                                                                                        | SCM 440                                                                                  | 2244                                                                                      | 4142; 4140                                                                                           | 5.1      |
| -                 | -                                                                                        | -                                                                                        | SCM 445 (H)                                                                              | -                                                                                         | 4150                                                                                                 | 5.1      |
| 31 CrMo 12        | F.124.A                                                                                  | -                                                                                        | -                                                                                        | 2240                                                                                      | -                                                                                                    | 5.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 5.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 5.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 5.1      |
| 51 CrV 4          | 51CrV4                                                                                   | -                                                                                        | SUP 10                                                                                   | 2230                                                                                      | 6150                                                                                                 | 5.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 5.1      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | <b>P</b> |
| C 20; C 21        | F.112                                                                                    | -                                                                                        | -                                                                                        | 1450                                                                                      | 1020                                                                                                 | 2.1      |
| C 25              | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | 1025                                                                                                 | 2.1      |
| C 35              | F.113                                                                                    | -                                                                                        | -                                                                                        | 1550                                                                                      | 1035                                                                                                 | 2.1      |
| C 45              | F.114                                                                                    | -                                                                                        | -                                                                                        | 1650                                                                                      | 1045                                                                                                 | 2.1      |
| C 40              | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | 1040                                                                                                 | 2.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 2.1      |
| C 20              | -                                                                                        | -                                                                                        | S 20 C; S 20 CK                                                                          | -                                                                                         | 1023                                                                                                 | 2.1      |
| C 25              | -                                                                                        | -                                                                                        | S 25 C                                                                                   | -                                                                                         | 1025                                                                                                 | 2.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 2.1      |
| C 35              | -                                                                                        | -                                                                                        | S 35 C                                                                                   | 1572                                                                                      | 1035                                                                                                 | 2.1      |
| C 40              | -                                                                                        | -                                                                                        | S 40 C                                                                                   | -                                                                                         | 1040                                                                                                 | 2.1      |
| C 45              | C45K                                                                                     | -                                                                                        | S 45 C                                                                                   | 1672                                                                                      | 1045                                                                                                 | 2.1      |
| -                 | F1140 / F1145                                                                            | -                                                                                        | -                                                                                        | 1672                                                                                      | A194 Gr.2                                                                                            | 2.1      |
| C 55              | -                                                                                        | -                                                                                        | -                                                                                        | 1655                                                                                      | 1055                                                                                                 | 3.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1      |
| C 60              | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | 1060                                                                                                 | 3.1      |
| C 50              | C55K                                                                                     | -                                                                                        | S 55 C                                                                                   | -                                                                                         | 1055                                                                                                 | 3.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | 1050                                                                                                 | 3.1      |
| C 60              | -                                                                                        | -                                                                                        | S 58 C                                                                                   | 1665; 1678                                                                                | 1060                                                                                                 | 3.1      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | <b>P</b> |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 2.1      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 2.1      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 2.1      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 2.1      |
| -                 | 100Cr6                                                                                   | -                                                                                        | -                                                                                        | -                                                                                         | L 3                                                                                                  | 3.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1      |
| -                 | -                                                                                        | -                                                                                        | SCR 420 H                                                                                | -                                                                                         | -                                                                                                    | 3.1      |
| 107 CrV 3 KU      | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | L 2                                                                                                  | 3.1      |
| 35 CrMo4          | -                                                                                        | -                                                                                        | -                                                                                        | 2234                                                                                      | 4135                                                                                                 | 3.1      |
| 40 CrMo 4         | -                                                                                        | -                                                                                        | -                                                                                        | 2244                                                                                      | 4142                                                                                                 | 3.1      |
| 107 Wv 5 KU       | 105WCr5                                                                                  | -                                                                                        | SKS 31                                                                                   | -                                                                                         | -                                                                                                    | 3.1      |
| 95 MnWCr 5 KU     | -                                                                                        | -                                                                                        | SKS 3                                                                                    | 2140                                                                                      | O 1                                                                                                  | 3.1      |
| 110 W 4 KU        | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1      |
| 45 WCrV 8 KU      | 45WCrSi8                                                                                 | -                                                                                        | -                                                                                        | 2710                                                                                      | S 1                                                                                                  | 3.1      |
| 55 WCrV 8 KU      | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1      |
| -                 | -                                                                                        | -                                                                                        | SNC 22                                                                                   | -                                                                                         | -                                                                                                    | 3.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1      |
| 102 V 2 KU        | -                                                                                        | -                                                                                        | SKS 43                                                                                   | -                                                                                         | W 210                                                                                                | 3.1      |
| 90 MnVCr 8 KU     | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | O 2                                                                                                  | 3.1      |
| X 210 Cr 13 KU    | X210Cr12                                                                                 | -                                                                                        | SKD 1                                                                                    | -                                                                                         | D 3                                                                                                  | 3.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1      |
| X 100 CrMoV 5 1KU | -                                                                                        | -                                                                                        | SKD 12                                                                                   | 2260                                                                                      | A 2                                                                                                  | 3.1      |
| X 10Ni9           | XBNi09                                                                                   | -                                                                                        | STBL 690                                                                                 | -                                                                                         | A353                                                                                                 | 3.1      |

|                                                           | R <sub>m</sub><br>[N/mm <sup>2</sup> ] | Rockwell<br>[HRC] |  Mat.-Nr. |  DIN |  AFNOR |  BS | EN |         |
|-----------------------------------------------------------|----------------------------------------|-------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----|---------|
| 3.1                                                       | 760                                    | 19                | 1.2379                                                                                     | X155CrVmo12-1                                                                           | Z 160 CDV 12                                                                              | BD 2                                                                                   | -  |         |
| 3.1                                                       | 760                                    | 19                | 1.2436                                                                                     | X210CrW12                                                                               | -                                                                                         | -                                                                                      | -  |         |
| 3.1                                                       | 760                                    | 19                | 1.2601                                                                                     | X165CrMoV12                                                                             | -                                                                                         | -                                                                                      | -  |         |
| 3.1                                                       | 850                                    |                   | CPOH Plus                                                                                  |                                                                                         |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | 950                                    |                   | PMD V10                                                                                    |                                                                                         |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | 950                                    |                   | PMD 9                                                                                      |                                                                                         |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | 950                                    |                   | PMD 10                                                                                     |                                                                                         |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | 820                                    |                   | 1.2379 Plus                                                                                |                                                                                         |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | 850                                    |                   | CP72                                                                                       |                                                                                         |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | 850                                    |                   | CPOH                                                                                       |                                                                                         |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | 850                                    |                   | WP7V                                                                                       |                                                                                         |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | 900                                    |                   | CPR                                                                                        |                                                                                         |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | 850 - 1125                             |                   | CP4M                                                                                       |                                                                                         |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | 820                                    |                   | CP8E                                                                                       |                                                                                         |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | 915                                    |                   | Vanadis 8 SuperClean                                                                       |                                                                                         |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | 950                                    |                   | ASP2011                                                                                    |                                                                                         |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | <850                                   |                   | 1.2990                                                                                     | X100CrMoV8-1-1                                                                          |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | <900                                   |                   | 1.2361                                                                                     | X91CrMoV18                                                                              |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | <850                                   |                   | 1.2360                                                                                     | X50CrMoV8-1                                                                             |                                                                                           |                                                                                        |    |         |
| 4.1                                                       | 950 - 1100                             |                   | 1.2709                                                                                     | X3NiCoMoTi18-9-5                                                                        |                                                                                           |                                                                                        |    |         |
| 4.1                                                       | 1125                                   |                   | PMD 550                                                                                    |                                                                                         |                                                                                           |                                                                                        |    |         |
| 4.1                                                       | 950 - 1100                             |                   | 1.2358                                                                                     | 60CrMoV18-5                                                                             |                                                                                           |                                                                                        |    |         |
| 4.1                                                       | <1015                                  |                   | 1.2746                                                                                     | 45NiCrMoV166                                                                            |                                                                                           |                                                                                        |    |         |
| <b>P Werkzeugstähle unlegiert · Unalloyed tool steels</b> |                                        |                   |                                                                                            |                                                                                         |                                                                                           |                                                                                        |    |         |
| 2.1                                                       | 640                                    |                   | 1.1520                                                                                     | C70W1                                                                                   | -                                                                                         | -                                                                                      | -  |         |
| 2.1                                                       | 640                                    |                   | 1.1525                                                                                     | C80W1                                                                                   | Y1 90; Y1 80                                                                              | -                                                                                      | -  |         |
| 2.1                                                       | 640                                    |                   | 1.1545                                                                                     | C105W1                                                                                  | Y1 105                                                                                    | -                                                                                      | -  |         |
| 2.1                                                       | 640                                    |                   | 1.1620                                                                                     | C70W2                                                                                   | -                                                                                         | -                                                                                      | -  |         |
| 2.1                                                       | 640                                    |                   | 1.1625                                                                                     | C80W2                                                                                   | Y1 80                                                                                     | BW 1B                                                                                  | -  |         |
| 2.1                                                       | 640                                    |                   | 1.1645                                                                                     | C105W2                                                                                  | Y1 105                                                                                    | -                                                                                      | -  |         |
| 2.1                                                       | 660                                    |                   | 1.1654                                                                                     | C110W                                                                                   | -                                                                                         | -                                                                                      | -  |         |
| 2.1                                                       | 710                                    |                   | 1.1663                                                                                     | C125W                                                                                   | Y2 120                                                                                    | -                                                                                      | -  |         |
| 2.1                                                       | 760                                    | 19                | 1.1673                                                                                     | C135W                                                                                   | Y2 140                                                                                    | -                                                                                      | -  |         |
| 2.1                                                       | 640                                    |                   | 1.1730                                                                                     | C45W                                                                                    | Y3 42                                                                                     | -                                                                                      | -  |         |
| 2.1                                                       | 760                                    | 19                | 1.1740                                                                                     | C60W                                                                                    | Y3 55                                                                                     | -                                                                                      | -  |         |
| 2.1                                                       | 730                                    |                   | 1.1744                                                                                     | C67W                                                                                    | -                                                                                         | -                                                                                      | -  |         |
| 2.1                                                       | 730                                    |                   | 1.1750                                                                                     | C75W                                                                                    | -                                                                                         | BW 1A                                                                                  | -  |         |
| 2.1                                                       | 570                                    |                   | 1.1820                                                                                     | C55W                                                                                    | -                                                                                         | -                                                                                      | -  |         |
| 2.1                                                       | 750                                    |                   | 1.1830                                                                                     | C85W                                                                                    | Y3 90                                                                                     | -                                                                                      | -  |         |
| <b>P Warmarbeitsstähle · Hot work steels</b>              |                                        |                   |                                                                                            |                                                                                         |                                                                                           |                                                                                        |    |         |
| 2.1                                                       | < 770                                  |                   | 1.2311                                                                                     | 40CrMnMo7                                                                               | -                                                                                         | -                                                                                      | -  |         |
| 2.1                                                       | < 770                                  |                   | 1.2312                                                                                     | 40CrMnMoS8-6                                                                            | -                                                                                         | -                                                                                      | -  |         |
| 2.1                                                       | < 770                                  |                   | 1.2711                                                                                     | 54NiCrMoV6                                                                              | 55 NCDV 6                                                                                 | -                                                                                      | -  |         |
| 2.1                                                       | < 800                                  |                   | 1.2713                                                                                     | 55NiCrMoV6                                                                              | 55 NCDV 7                                                                                 | Bh 224                                                                                 | -  |         |
| 2.1                                                       | > 800                                  |                   | 1.2738                                                                                     | 40CrMnNiMo8                                                                             | -                                                                                         | -                                                                                      | -  |         |
| 2.1                                                       | < 770                                  |                   | 1.2083                                                                                     | X42Cr13                                                                                 | Z 40 C 14                                                                                 | -                                                                                      | -  |         |
| 2.1                                                       | < 800                                  |                   | 1.2343                                                                                     | X38CrMoV5-1                                                                             | Z 38 CDV 5                                                                                | BH 11                                                                                  | -  |         |
| 2.1                                                       | < 800                                  |                   | 1.2344                                                                                     | X40CrMoV5-1                                                                             | Z 40 CDV 5                                                                                | BH 13                                                                                  | -  |         |
| 2.1                                                       | < 800                                  |                   | 1.2365                                                                                     | X32CrMoV3-3                                                                             | Z 32 CDV 28                                                                               | BH 10                                                                                  | -  |         |
| 2.1                                                       | < 800                                  |                   | 1.2567                                                                                     | X30WCrV5-3                                                                              | Z 32 WCV 5                                                                                | -                                                                                      | -  |         |
| 2.1                                                       | < 800                                  |                   | 1.2581                                                                                     | X30WCrV9-3                                                                              | Z 30 WCV 9                                                                                | BH 21                                                                                  | -  |         |
| 2.1                                                       | < 770                                  |                   | 1.2885                                                                                     | X32CrMoV3-3-3                                                                           | -                                                                                         | BH 10 A                                                                                | -  |         |
| 2.1                                                       | < 800                                  |                   | 1.2083 ESU                                                                                 | X40CR14                                                                                 | Z40 C14                                                                                   |                                                                                        |    |         |
| 2.1                                                       | <780                                   |                   | 1.2343 ESU                                                                                 | X37CrMoV5-1                                                                             | Z38 CDV 5                                                                                 |                                                                                        |    |         |
| 2.1                                                       | <780                                   |                   | 1.2344 ESU                                                                                 | X40CrMoV5-1                                                                             | Z40 CDV 5                                                                                 |                                                                                        |    |         |
| 2.1                                                       | 750                                    |                   | 1.2999                                                                                     | X45MoCrV5-3-1                                                                           |                                                                                           |                                                                                        |    |         |
| 2.1                                                       | 690                                    |                   | Thermodur E38K Superclean                                                                  |                                                                                         |                                                                                           |                                                                                        |    |         |
| 2.1                                                       | 785                                    |                   | Thermodur E40K Superclean                                                                  |                                                                                         |                                                                                           |                                                                                        |    |         |
| 2.1                                                       | 755                                    |                   | Thermodur 2383 Superclean                                                                  |                                                                                         |                                                                                           |                                                                                        |    |         |
| 2.1                                                       | 785                                    |                   | 1.2329                                                                                     | 46CrSiMoV7                                                                              |                                                                                           |                                                                                        |    |         |
| 2.1                                                       | 785                                    |                   | 1.2342                                                                                     | X35CrMoV5-1-1                                                                           |                                                                                           |                                                                                        |    |         |
| 2.1                                                       | 785                                    |                   | 1.2367                                                                                     | X38CrMoV5-3                                                                             | Z38CDV5-3                                                                                 |                                                                                        |    |         |
| 2.1                                                       | 755                                    |                   | 1.2323                                                                                     | 48CrMoV6                                                                                |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | < 840                                  |                   | 1.2744                                                                                     | 57NiCrMoV7-7                                                                            | -                                                                                         | -                                                                                      | -  |         |
| 3.1                                                       | > 860                                  |                   | 1.2764                                                                                     | X19NiCrMo4                                                                              | -                                                                                         | -                                                                                      | -  |         |
| 3.1                                                       | < 870                                  |                   | 1.2767                                                                                     | X45NiCrMo4                                                                              | Y 35 NCD 16                                                                               | -                                                                                      | -  |         |
| 3.1                                                       | < 840                                  |                   | 1.2316                                                                                     | X36CrMo17                                                                               | -                                                                                         | -                                                                                      | -  |         |
| 3.1                                                       | 850                                    |                   | 1.2714                                                                                     | 55NiCrMoV7                                                                              | 55NCDV7                                                                                   |                                                                                        |    |         |
| 3.1                                                       | 820                                    |                   | 1.2740                                                                                     | 28NiCrMoV10                                                                             |                                                                                           |                                                                                        |    |         |
| 3.1                                                       | <900                                   |                   | 1.2397                                                                                     |                                                                                         |                                                                                           |                                                                                        |    | ASP2011 |
| 4.1                                                       | 1080                                   | > 29              | Toolox 33                                                                                  | -                                                                                       | -                                                                                         | -                                                                                      | -  |         |
| 4.1                                                       | 1250                                   | 43                | Hardox 400                                                                                 | -                                                                                       | -                                                                                         | -                                                                                      | -  |         |
| 4.1                                                       | 950 - 1100                             |                   | 1.2085                                                                                     | X33CrS16                                                                                | Z35 CD 17.S                                                                               |                                                                                        |    |         |
| 4.1                                                       | <1125                                  |                   | 1.2294                                                                                     | X5CrS12                                                                                 |                                                                                           |                                                                                        |    |         |
| 4.1                                                       | <1125                                  |                   | 1.2099                                                                                     | X5CrS12                                                                                 |                                                                                           |                                                                                        |    |         |
| 5.1                                                       | 1450                                   | 45                | Toolox 44                                                                                  | -                                                                                       | -                                                                                         | -                                                                                      | -  |         |



**EMUGE**  
**FRANKEN**

|          | R <sub>m</sub><br>[N/mm <sup>2</sup> ]                                                                | Rockwell<br>[HRC] |  Mat.-Nr. |  DIN |  AFNOR |  BS | EN          |  |
|----------|-------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------|--|
| 5.1      | 1300 - 1450                                                                                           |                   | 1.2714 HH                                                                                  | 55NiCrMoV7                                                                              | 55 NCDV 7                                                                                 |                                                                                        |             |  |
| <b>P</b> | <b>Nitrierstähle · Nitriding steels</b>                                                               |                   |                                                                                            |                                                                                         |                                                                                           |                                                                                        |             |  |
| 3.1      | < 1000                                                                                                | < 30              | 1.8504                                                                                     | 34CrAl6                                                                                 | -                                                                                         | -                                                                                      | -           |  |
| 3.1      | < 1000                                                                                                | < 30              | 1.8506                                                                                     | 34CrAlS5                                                                                | -                                                                                         | -                                                                                      | -           |  |
| 3.1      | < 1000                                                                                                | < 30              | 1.8507                                                                                     | 34CrAlMo5                                                                               | 30 CAD 6.12                                                                               | 905 M 31                                                                               | -           |  |
| 3.1      | < 1000                                                                                                | < 30              | 1.8509                                                                                     | 41CrAlMo7                                                                               | 40 CAD 6.12                                                                               | 905 M 39                                                                               | 41B         |  |
| 3.1      | > 1000                                                                                                | > 30              | 1.8515                                                                                     | 31CrMo12                                                                                | 30 CD 12                                                                                  | 722 M 24                                                                               | -           |  |
| 3.1      | > 1000                                                                                                | > 30              | 1.8519                                                                                     | 31CrMoV9                                                                                | -                                                                                         | -                                                                                      | -           |  |
| 3.1      | > 1000                                                                                                | > 30              | 1.8521                                                                                     | 15CrMoV5-9                                                                              | -                                                                                         | -                                                                                      | -           |  |
| 3.1      | > 1000                                                                                                | > 30              | 1.8523                                                                                     | 39CrMoV13-9                                                                             | -                                                                                         | 897 M 39                                                                               | 40C         |  |
| 3.1      | > 1000                                                                                                | > 30              | 1.8550                                                                                     | 34CrAlNi7                                                                               | -                                                                                         | -                                                                                      | -           |  |
| 4.1      | <1080                                                                                                 |                   | 1.7765                                                                                     | 32CrMoV12-10                                                                            |                                                                                           |                                                                                        |             |  |
| <b>P</b> | <b>HSS Schnellarbeitsstahl · HSS High speed steel</b>                                                 |                   |                                                                                            |                                                                                         |                                                                                           |                                                                                        |             |  |
| 3.1      | <915                                                                                                  |                   | 1.3343                                                                                     | HS 6-5-2 C                                                                              | Z85 WDCV06-05-04-02                                                                       |                                                                                        |             |  |
| 3.1      | <905                                                                                                  |                   | 1.3344 PM                                                                                  | PM 6-5-3                                                                                | X130WMoCrV 6-5-4-3                                                                        |                                                                                        |             |  |
| 3.1      | 880                                                                                                   |                   | PMD M4                                                                                     |                                                                                         |                                                                                           |                                                                                        |             |  |
| 3.1      | 880                                                                                                   |                   | PMD 23                                                                                     |                                                                                         |                                                                                           |                                                                                        |             |  |
| 3.1      | 880                                                                                                   |                   | 1.3343 Plus                                                                                |                                                                                         |                                                                                           |                                                                                        | HS 6-5-2C   |  |
| 3.1      | 850 - 950                                                                                             |                   | Z-T15 PM Speed                                                                             |                                                                                         |                                                                                           |                                                                                        |             |  |
| 3.1      | 880 - 1095                                                                                            |                   | 1.3394                                                                                     | PMHS 6-5-3                                                                              |                                                                                           |                                                                                        | ASP2023     |  |
| 3.1      | 950                                                                                                   |                   | 1.3202                                                                                     | HS 12-0-5-5                                                                             |                                                                                           |                                                                                        | ASP2015     |  |
| 3.1      | 915                                                                                                   |                   | 1.3243                                                                                     | HS 6-5-2-5                                                                              | Z85WDKCV06-05-05-04-02                                                                    |                                                                                        |             |  |
| 3.1      | <950                                                                                                  |                   | 1.3247                                                                                     | HS 2-10-1-8                                                                             | Z110DKCWV                                                                                 |                                                                                        |             |  |
| 4.1      | <960                                                                                                  |                   | M V10 PM                                                                                   |                                                                                         |                                                                                           |                                                                                        |             |  |
| 4.1      | <970                                                                                                  |                   | M W10 PM                                                                                   |                                                                                         |                                                                                           |                                                                                        | HS 10-2-5-8 |  |
| 4.1      | 1030                                                                                                  |                   | PMD 30                                                                                     |                                                                                         |                                                                                           |                                                                                        |             |  |
| 4.1      | 1030                                                                                                  |                   | PMD 52                                                                                     |                                                                                         |                                                                                           |                                                                                        |             |  |
| 4.1      | 1155                                                                                                  |                   | PMD 60                                                                                     |                                                                                         |                                                                                           |                                                                                        |             |  |
| 4.1      | 965 - 1060                                                                                            |                   | CPM Rex 76                                                                                 |                                                                                         |                                                                                           |                                                                                        |             |  |
| 4.1      | 1060                                                                                                  |                   | Z-M48 PM Speed                                                                             |                                                                                         |                                                                                           |                                                                                        |             |  |
| 4.1      | 1030 - 1095                                                                                           |                   | 1.3294                                                                                     | PMHS 6-5-3-8                                                                            |                                                                                           |                                                                                        | ASP2030     |  |
| 4.1      | 1155                                                                                                  |                   | 1.3292                                                                                     | PMHS 7-7-7-11                                                                           |                                                                                           |                                                                                        | ASP2060     |  |
| 4.1      | 1030                                                                                                  |                   | 1.3253                                                                                     | PMHS 11-2-5-8                                                                           |                                                                                           |                                                                                        | ASP2052     |  |
| 4.1      | 1030                                                                                                  |                   | 1.3352                                                                                     | PMHS 4-3-8                                                                              |                                                                                           |                                                                                        | ASP2053     |  |
| 4.1      | <1030                                                                                                 |                   | 1.3252                                                                                     |                                                                                         |                                                                                           |                                                                                        | ASP2052     |  |
| 4.1      | 1080                                                                                                  |                   | 1.3207                                                                                     | HS 10-4-3-10                                                                            | Z130WKCDV10-10-04-04-03                                                                   |                                                                                        |             |  |
| 4.1      | 1030 - 1190                                                                                           |                   | 1.3208                                                                                     | HS 9-4-3-11                                                                             | Z140KWCDV10-09-04-04-03                                                                   |                                                                                        |             |  |
| 4.1      | 1030                                                                                                  |                   | 1.3211                                                                                     | S 12-1-2-3                                                                              |                                                                                           |                                                                                        |             |  |
| <b>P</b> | <b>Pulvermetallurgischer Stahl · Powder metallurgical steel</b>                                       |                   |                                                                                            |                                                                                         |                                                                                           |                                                                                        |             |  |
| 2.1      | 785                                                                                                   |                   | Z-Wear PM cold                                                                             |                                                                                         |                                                                                           |                                                                                        |             |  |
| 3.1      | 785 - 1030                                                                                            |                   | CPM Rex M4                                                                                 |                                                                                         |                                                                                           |                                                                                        |             |  |
| 3.1      | 785 - 1030                                                                                            |                   | Z-M4 PM Speed                                                                              |                                                                                         |                                                                                           |                                                                                        |             |  |
| 3.1      | 770 - 850                                                                                             |                   | Z-Tuff PM                                                                                  |                                                                                         |                                                                                           |                                                                                        |             |  |
| 3.1      | 950                                                                                                   |                   | ASP 420H                                                                                   |                                                                                         |                                                                                           |                                                                                        |             |  |
| 4.1      | 1030                                                                                                  |                   | ASP APZ10                                                                                  |                                                                                         |                                                                                           |                                                                                        |             |  |
| 5.1      | 1220 - 1420                                                                                           |                   | CPM Rex 121                                                                                |                                                                                         |                                                                                           |                                                                                        |             |  |
| <b>P</b> | <b>Wälzlagerstahl · Rolling bearing steel</b>                                                         |                   |                                                                                            |                                                                                         |                                                                                           |                                                                                        |             |  |
| 2.1      | 720                                                                                                   |                   | 1.3551                                                                                     | 80MoCrV42-16                                                                            |                                                                                           |                                                                                        |             |  |
| <b>P</b> | <b>Sonderstähle · Specialsteels</b>                                                                   |                   |                                                                                            |                                                                                         |                                                                                           |                                                                                        |             |  |
| 5.1      | 1960                                                                                                  |                   | 1.6354                                                                                     | X2NiCoMo18-9-5                                                                          | K93120                                                                                    |                                                                                        |             |  |
| 5.1      | 1600                                                                                                  |                   | 1.6359                                                                                     | X2NiCoMo18-8-5                                                                          | K92890                                                                                    | S162                                                                                   |             |  |
| <b>M</b> | <b>Rost- und säurebeständige Stähle – ferritisch · Corrosion and acid proof steels – ferritic</b>     |                   |                                                                                            |                                                                                         |                                                                                           |                                                                                        |             |  |
| 1.1      | 400 - 600                                                                                             |                   | 1.4002                                                                                     | X6CrAl13                                                                                | Z 6 CA 13                                                                                 | 405 S 17                                                                               | -           |  |
| 1.1      | 380 - 560                                                                                             |                   | 1.4512                                                                                     | X5CrTi12                                                                                | Z 6 CT 12                                                                                 | 409 S 19                                                                               | -           |  |
| 1.1      | 400 - 600                                                                                             |                   | 1.4000                                                                                     | X6Cr13                                                                                  | Z 6 C 13                                                                                  | 403 S 17                                                                               | -           |  |
| 1.1      | 450 - 600                                                                                             |                   | 1.4016                                                                                     | X6Cr17                                                                                  | Z 8 C 17                                                                                  | 430 S 15                                                                               | 960         |  |
| 1.1      | 500 - 700                                                                                             |                   | 1.4742                                                                                     | X10CrAlSi18                                                                             | Z 10 CAS 18                                                                               | 430 S 15                                                                               | 60          |  |
| 1.1      | 450 - 630                                                                                             |                   | 1.4113                                                                                     | X6CrMo17                                                                                | Z 8 CD 17.01                                                                              | 434 S 17                                                                               | -           |  |
| 1.1      | 420 - 600                                                                                             |                   | 1.4510                                                                                     | X3CrTi17                                                                                | Z 8 CT 17                                                                                 | -                                                                                      | -           |  |
| 1.1      | 400 - 600                                                                                             |                   | 1.4521                                                                                     | X2CrMoTi18-2                                                                            | Z 3 CDT 18-02                                                                             | -                                                                                      | -           |  |
| 1.1      | 450 - 650                                                                                             |                   | 1.4724                                                                                     | X10CrAlSi13                                                                             | Z 13 C 13                                                                                 | -                                                                                      | -           |  |
| 1.1      | 520 - 720                                                                                             |                   | 1.4762                                                                                     | X10CrAl24                                                                               | Z 10 CAS 24                                                                               | -                                                                                      | -           |  |
| 1.1      | 420 - 620                                                                                             |                   | 1.4713                                                                                     | X10CrAlSi7                                                                              |                                                                                           |                                                                                        |             |  |
| <b>M</b> | <b>Rost- und säurebeständige Stähle – austenitisch · Corrosion and acid proof steels – austenitic</b> |                   |                                                                                            |                                                                                         |                                                                                           |                                                                                        |             |  |
| 2.1      | 750 - 950                                                                                             |                   | 1.4372                                                                                     | X12CrMnNiN17-7-5                                                                        | Z 12 CMN 17-07 Az                                                                         | -                                                                                      | -           |  |
| 2.1      | 680 - 880                                                                                             |                   | 1.4373                                                                                     | X12CrMnNiN18-9-5                                                                        | -                                                                                         | 284 S 16                                                                               | -           |  |
| 2.1      | 600 - 950                                                                                             |                   | 1.4310                                                                                     | X10CrNi18-8, X12CrNi17-7                                                                | Z 11 CN 17-08                                                                             | 301 S 21                                                                               | -           |  |
| 2.1      | 630 - 850                                                                                             |                   | 1.4318                                                                                     | X2CrNi18-7                                                                              | Z 3 CN 18-07 Az                                                                           | -                                                                                      | -           |  |
| 2.1      | 500 - 700                                                                                             |                   | 1.4305                                                                                     | X10CrNiS18-9                                                                            | Z 10 CNF 18.09                                                                            | 303 S 21                                                                               | 58M         |  |
| 2.1      | 600 - 951                                                                                             |                   | 1.4350                                                                                     | X5CrNi18-9                                                                              | Z 6 CN 18.09                                                                              | 304 S 31                                                                               | 58E         |  |
| 2.1      | 520 - 720                                                                                             |                   | 1.4301                                                                                     | X5CrNi18-9                                                                              | Z 6 CN 18.09                                                                              | 304 S 15                                                                               | 58E         |  |
| 2.1      | 460 - 680                                                                                             |                   | 1.4306                                                                                     | X2CrNi19-11                                                                             | Z 2 CN 18.10                                                                              | 304 S 12                                                                               | -           |  |
| 2.1      | 550 - 750                                                                                             |                   | 1.4311                                                                                     | X2CrNi18-10                                                                             | Z 2 CN 18.10                                                                              | 304 S 62                                                                               | -           |  |
| 2.1      | 510 - 710                                                                                             |                   | 1.4948                                                                                     | X6CrNi18-11                                                                             | -                                                                                         | 304 S 50                                                                               | -           |  |
| 2.1      | 520 - 700                                                                                             |                   | 1.4307                                                                                     | X2CrNi18-9                                                                              | Z 2 CN 19-09                                                                              | -                                                                                      | -           |  |
| 2.1      | 500 - 750                                                                                             |                   | 1.4315                                                                                     | X5CrNiN19-9                                                                             | -                                                                                         | -                                                                                      | -           |  |





**EMUGE**  
**FRANKEN**

|                                                                                                                             | R <sub>m</sub><br>[N/mm <sup>2</sup> ] | Rockwell<br>[HRC] | Mat.-Nr. | DIN                 | AFNOR                  | BS         | EN       |  |
|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-------------------|----------|---------------------|------------------------|------------|----------|--|
|                                                                                                                             |                                        |                   |          |                     |                        |            |          |  |
| 2.1                                                                                                                         | 500 - 650                              |                   | 1.4303   | X5CrNi18-12         | Z 8 CN 18.12           | 305 S 19   | -        |  |
| 2.1                                                                                                                         | 500 - 700                              |                   | 1.4833   | X12CrNi23-13        | Z 15 CN 23-13          | 309 S 24   | -        |  |
| 2.1                                                                                                                         | 500 - 700                              |                   | 1.4845   | X8CrNi25-21         | Z 8 CN 25-20           | 310 S 24   | -        |  |
| 2.1                                                                                                                         | 550 - 750                              |                   | 1.4841   | X15CrNiSi25-21      | Z 15 CNS 25-20         | 314 S 25   | -        |  |
| 2.1                                                                                                                         | 520 - 680                              |                   | 1.4401   | X5CrNiMo18-10       | Z 6 CND 17.11          | 316 S 16   | 58J      |  |
| 2.1                                                                                                                         | 530 - 730                              |                   | 1.4436   | X5CrNiMo17-13-3     | Z 6 CND 17.12          | 316 S 16   | -        |  |
| 2.1                                                                                                                         | 520 - 680                              |                   | 1.4404   | X2CrNiMo17-13-2     | Z 2 CND 17.12          | 316 S 11   | -        |  |
| 2.1                                                                                                                         | 520 - 700                              |                   | 1.4435   | X2CrNiMo18-14-3     | Z 2 CND 17.13          | 317 S 12   | -        |  |
| 2.1                                                                                                                         | 520 - 700                              |                   | 1.4432   | X2CrNiMo17-12-3     | Z 3 CND 17-02-03       | 316 S 13   | -        |  |
| 2.1                                                                                                                         | 580 - 780                              |                   | 1.4406   | X2CrNiMoN17-12-2    | Z 2 CND 17.12 AZ       | 316 S 61   | 58C      |  |
| 2.1                                                                                                                         | 580 - 780                              |                   | 1.4429   | X2CrNiMoN17-13-3    | Z 2 CND 17.13 AZ       | 316 S 62   | -        |  |
| 2.1                                                                                                                         | 490 - 740                              |                   | 1.4573   | X10CrNiMoTi-18-12   | -                      | 320 S 33   | -        |  |
| 2.1                                                                                                                         | 520 - 690                              |                   | 1.4571   | X6CrNiMoTi17-12-2   | Z 6 CNT 17.12          | 320 S 31   | 58J      |  |
| 2.1                                                                                                                         | 520 - 720                              |                   | 1.4580   | X6CrNiMoNb17-12-2   | Z 6 CNDNb 17.12        | 318 S 17   | -        |  |
| 2.1                                                                                                                         | 550 - 700                              |                   | 1.4438   | X2CrNiMo18-16-4     | Z 2 CND 19.15          | 317 S 12   | -        |  |
| 2.1                                                                                                                         | 580 - 780                              |                   | 1.4439   | X2CrNiMoN17-13-5    | Z 3 CND 18-14-05 Az    | -          | -        |  |
| 2.1                                                                                                                         | 490 - 740                              |                   | 1.4583   | X10CrNiMoNb18-12    | -                      | -          | -        |  |
| 2.1                                                                                                                         | 500 - 720                              |                   | 1.4541   | X6CrNiTi18-10       | Z 6 CNT 18.10          | 321 S 12   | 58B      |  |
| 2.1                                                                                                                         | 500 - 720                              |                   | 1.4878   | X8CrNiTi18-10       | Z 6 CNT 18-10          | 321 S 31   | -        |  |
| 2.1                                                                                                                         | 500 - 720                              |                   | 1.4550   | X6CrNiNb18-10       | Z 6 CNNb 18.10         | 347 S 17   | 58F      |  |
| 2.1                                                                                                                         | 500 - 700                              |                   | 1.4563   | X1NiCrMoCu31-27-4   | Z 2 NCDU 31-27         | -          | -        |  |
| 2.1                                                                                                                         | 520 - 730                              |                   | 1.4539   | X1NiCrMoCu25-20-5   | Z 2 NCDU 25-20         | 904 S 13   | -        |  |
| 2.1                                                                                                                         | 550 - 750                              |                   | 1.4864   | X12NiCrSi35-16      | Z 20 NCS 33-16         | NA 17      | -        |  |
| 2.1                                                                                                                         | 620 - 880                              |                   | 1.4460   | X8CrNiMo27-5        | Z 5 CND 27-05          | -          | -        |  |
| 2.1                                                                                                                         | 500 - 740                              |                   | 1.4546   | X5CrNiNb18-10       | Z 6 CNNb 18.10         | 347 S 18   | 58F      |  |
| 2.1                                                                                                                         | 500 - 720                              |                   | 1.4886   | X10NiCrSi35-19      |                        |            |          |  |
| 2.1                                                                                                                         | 900                                    |                   | 1.4528   | X105CrCoMo18-2      |                        |            |          |  |
| 2.1                                                                                                                         | 850                                    |                   | 1.4529   | X1NiCrMoCuN25-20-7  |                        |            |          |  |
| 2.1                                                                                                                         | >495                                   |                   | 1.4547   | X1CrNiMoCuN20-18-7  |                        |            |          |  |
| 2.1                                                                                                                         | <740                                   |                   | 1.4988   | X8CrNiMoVNB16-13    |                        |            |          |  |
| 2.1                                                                                                                         | 650 - 850                              |                   | 1.4835   | X9CrNiSiN21-11-2    |                        |            |          |  |
| 4.1                                                                                                                         | 1180                                   |                   | 1.4980   | X6NiCrTiMoVB25-15-2 |                        | 1506       |          |  |
| <b>M Rost- und säurebeständige Stähle – Duplex · Corrosion and acid proof steels – Duplex</b>                               |                                        |                   |          |                     |                        |            |          |  |
| 3.1                                                                                                                         | 340 - 950                              |                   | 1.4462   | X2CrNiMoN22-5-3     | Z 3 CND 22-05 Az       | 318 S 13   | -        |  |
| 3.1                                                                                                                         | 630 - 850                              |                   | 1.4362   | X2CrNiN23-4         | Z 3 CN 23-04 Az        | -          | -        |  |
| 3.1                                                                                                                         | 730 - 1000                             |                   | 1.4507   | X2CrNiMoCuN25-6-3   | Z 3 CNDU 25-06         | -          | -        |  |
| 3.1                                                                                                                         | 730 - 1000                             |                   | 1.4507   | X2CrNiMoCuN25-6-3   | Z 3 CNDU 25-06         | -          | -        |  |
| 4.1                                                                                                                         | 730 - 1250                             |                   | 1.4410   | X2CrNiMoN25-7-4     | Z 3 CND 25-06          | -          | -        |  |
| <b>M Rost- und säurebeständige Stähle – martensitisch · Corrosion and acid proof steels – martensitic</b>                   |                                        |                   |          |                     |                        |            |          |  |
| 1.1                                                                                                                         | > 600                                  |                   | 1.4006   | X10Cr13             | Z 12 C 13              | 410 S 21   | 56A      |  |
| 1.1                                                                                                                         | 650 - 850                              |                   | 1.4005   | X12CrS13            | Z 12 CF 13             | 416 S 21   | -        |  |
| 1.1                                                                                                                         | > 700                                  |                   | 1.4021   | X20Cr13             | Z 20 C 13              | 420 S 37   | -        |  |
| 1.1                                                                                                                         | > 740                                  |                   | 1.4028   | X30Cr13             | Z 30 C 13              | 420 S 45   | -        |  |
| 1.1                                                                                                                         | > 760                                  |                   | 1.4031   | X38Cr13             | Z 40 C 14              | -          | -        |  |
| 1.1                                                                                                                         | > 780                                  |                   | 1.4034   | X46Cr13             | Z 40 CM                | 420 S 45   | 56D      |  |
| 1.1                                                                                                                         | > 850                                  |                   | 1.4116   | X50CrMoV15          | Z 50 CD 15             | -          | -        |  |
| 1.1                                                                                                                         | > 900                                  |                   | 1.4122   | X39CrMo17-1         | Z 38 CD 16-01          | -          | -        |  |
| 1.1                                                                                                                         | > 650                                  |                   | 1.4024   | X15Cr13             | Z 12 C 13 M            | 420 S 29   | 56B      |  |
| 1.1                                                                                                                         | 640 - 840                              |                   | 1.4104   | X14CrMoS17          | Z 13 CF 17             | -          | -        |  |
| 1.1                                                                                                                         | 750 - 950                              |                   | 1.4057   | X17CrNi162          | Z 15 CN 16.02          | 431 S 29   | 57       |  |
| 1.1                                                                                                                         |                                        |                   | 1.4747   | X80CrNiSi20         | Z 80 CSN 20.02         | 443 S 65   | 59       |  |
| 1.1                                                                                                                         | < 900                                  |                   | 1.4125   | X105CrMo17          | Z 100 CD 17            | -          | -        |  |
| 1.1                                                                                                                         | <900                                   |                   | 1.4111   | X110CrMoV15         |                        |            |          |  |
| 1.1                                                                                                                         | <900                                   |                   | 1.4112   | X90CrMoV18          |                        |            |          |  |
| 1.1                                                                                                                         | 800 - 950                              |                   | 1.4044   | X28CrNi16-2         | Z15CN16-02             |            |          |  |
| 1.1                                                                                                                         | 785                                    |                   | 1.4108   | X30CrMoN15-1        |                        |            |          |  |
| 1.1                                                                                                                         | 900                                    |                   | 1.4112   | X90CrMoV18          |                        |            |          |  |
| 1.1                                                                                                                         |                                        |                   | 1.4320   | X2CrNiMo13-4        |                        |            |          |  |
| 1.1                                                                                                                         | >620                                   |                   | 1.4901   | X11CrWMoVNB9-2      |                        |            |          |  |
| 1.1                                                                                                                         | 630 - 730                              |                   | 1.4903   | X10CrMoVNB9-1       |                        |            |          |  |
| 1.1                                                                                                                         | 800 - 950                              |                   | 1.4922   | X20CrMoV11-1        |                        |            |          |  |
| 1.1                                                                                                                         | 800 - 950                              |                   | 1.4923   | X20CrMoWV12-1       |                        |            |          |  |
| 3.1                                                                                                                         | 780 - 980                              |                   | 1.4313   | X5CrNi134           | Z 5 CN 13.4            | 425 C 11   | -        |  |
| 3.1                                                                                                                         | 840 - 1000                             |                   | 1.4418   | X4CrNiMo6-5-1       | Z 6 CND 16-05-01       | -          | -        |  |
| 3.1                                                                                                                         | 930 - 1130                             |                   | 1.4938   | X12CrNiMoV12-3      |                        | S151; S159 |          |  |
| 3.1                                                                                                                         | 995                                    |                   | 1.4939   | X12CrNiMo12         | Jethete                |            |          |  |
| 3.1                                                                                                                         | 1030                                   |                   | 1.4210   | X20CrMo13           |                        |            | ASP AZ10 |  |
| 3.1                                                                                                                         | 900 - 1050                             |                   | 1.4913   | X19CrMoNbVN10 1     |                        |            |          |  |
| <b>M Rost- und säurebeständige Stähle – ausscheidungshärtend · Corrosion and acid proof steels – precipitation-hardened</b> |                                        |                   |          |                     |                        |            |          |  |
| 3.1                                                                                                                         | > 1030                                 |                   | 1.4568   | X7CrNiAl17-7        | Z 9 CNA 17-07          | 301 S 81   | -        |  |
| 3.1                                                                                                                         | 960 - 1310                             |                   | 1.4545   | X5CrNiCuNb15-5-4    | 15-5PH                 |            |          |  |
| 3.1                                                                                                                         | 860 - 1310                             |                   | 1.4548   | X5CrNiCuNb17-4-4    | 17-4PH                 |            |          |  |
| 3.1                                                                                                                         | 1000 - 1200                            |                   | 1.4594   | X5CrNiMoCuNb14-5    |                        |            |          |  |
| 3.1                                                                                                                         | 800 - 1000                             |                   | 1.4501   | X2CrNiMoCuWN25-7-4  | Alloy 100 Super Duplex |            |          |  |
| 4.1                                                                                                                         | > 1275                                 |                   | 1.4542   | X5CrNiCuNb16-4      | Z 7 CNU 15-05          | -          | -        |  |
| 4.1                                                                                                                         | 1250                                   |                   | 1.4534   | X3CrNiMoAl13-8-2    | 13-8PH                 |            |          |  |



|  | <br>UNI | <br>UNE | <br>JIS | <br>SIS | <br>AISI/SAE/ASTM |          |
|--|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|----------|
|  | X 8 CrNi 19 10                                                                           | -                                                                                        | SUS 305                                                                                  | -                                                                                         | 308; 305                                                                                             | 2.1      |
|  | X 6 CrNi 23 14                                                                           | -                                                                                        | SUS 309S                                                                                 | -                                                                                         | 309 S                                                                                                | 2.1      |
|  | X 6 CrNi 25 20                                                                           | F.331                                                                                    | SUS 310S                                                                                 | 2361                                                                                      | 310 S                                                                                                | 2.1      |
|  | -                                                                                        | F.3310                                                                                   | SUH 310                                                                                  | -                                                                                         | 314                                                                                                  | 2.1      |
|  | X 5 CrNiMo 17 12                                                                         | F.3543                                                                                   | SUS 316                                                                                  | 2347                                                                                      | 316                                                                                                  | 2.1      |
|  | X 5 CrNiMo 17 13                                                                         | F.3538                                                                                   | SUS 316                                                                                  | 2343                                                                                      | 316                                                                                                  | 2.1      |
|  | X 2 CrNiMo 17 12                                                                         | F.3533                                                                                   | SUS 316 L                                                                                | 2348                                                                                      | 316 L                                                                                                | 2.1      |
|  | X 2 CrNiMo 17 13                                                                         | -                                                                                        | SCS 16; SUS 316 L                                                                        | 2353                                                                                      | 316 L                                                                                                | 2.1      |
|  | X 2 CrNiMo 17-12-3                                                                       | F-3537                                                                                   | -                                                                                        | -                                                                                         | 316 L                                                                                                | 2.1      |
|  | X 2 CrNiMoN 17 12                                                                        | F-3542                                                                                   | SUS 316 LN                                                                               | -                                                                                         | 316 LN                                                                                               | 2.1      |
|  | X 2 CrNiMoN 17 13                                                                        | F-3543                                                                                   | SUS 316 LN                                                                               | 2375                                                                                      | 316 LN                                                                                               | 2.1      |
|  | X 6 CrNiMoTi 17 13                                                                       | -                                                                                        | SUS 316 Ti                                                                               | -                                                                                         | 316 Ti                                                                                               | 2.1      |
|  | X 6 CrNiMoTi 17 12                                                                       | F.3535                                                                                   | SUS 316 Ti                                                                               | 2350                                                                                      | 316 Ti                                                                                               | 2.1      |
|  | X 6 CrNiMoNb 17 12                                                                       | F.3536                                                                                   | -                                                                                        | -                                                                                         | 316 Cb                                                                                               | 2.1      |
|  | X 2 CrNiMo 18 15                                                                         | F-3539                                                                                   | SUS 317 L                                                                                | 2367                                                                                      | 317 L                                                                                                | 2.1      |
|  | -                                                                                        | F-3544                                                                                   | -                                                                                        | -                                                                                         | 317 LMN                                                                                              | 2.1      |
|  | X 6 CrNiMoNb 17 13                                                                       | -                                                                                        | -                                                                                        | -                                                                                         | 318                                                                                                  | 2.1      |
|  | X 6 CrNiTi 18 11                                                                         | F.3553; F.3523                                                                           | SUS 321                                                                                  | 2337                                                                                      | 321                                                                                                  | 2.1      |
|  | -                                                                                        | -                                                                                        | SUS 321                                                                                  | -                                                                                         | 321 H                                                                                                | 2.1      |
|  | X 6 CrNiNb 18 11                                                                         | F.3552; F.3524                                                                           | SUS 347                                                                                  | 2338                                                                                      | 347                                                                                                  | 2.1      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | 2584                                                                                      | B 668                                                                                                | 2.1      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | 2562                                                                                      | 904 L                                                                                                | 2.1      |
|  | -                                                                                        | F.3313                                                                                   | SUH 330                                                                                  | -                                                                                         | 330                                                                                                  | 2.1      |
|  | -                                                                                        | F-35552                                                                                  | SUS 329 J 1                                                                              | 2324                                                                                      | 329                                                                                                  | 2.1      |
|  | X 6 CrNiNb 18 11                                                                         | F-3524                                                                                   | SUS 347                                                                                  | 2338                                                                                      | 348                                                                                                  | 2.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | B511; B512; B535; B536; B546                                                                         | 2.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 2.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | A479; A479M; B649; B691                                                                              | 2.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | S31254; A182F44; A276F44                                                                             | 2.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 2.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | 253 MA                                                                                               | 2.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | 660, Alloy A-286                                                                                     | 4.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | <b>M</b> |
|  | -                                                                                        | -                                                                                        | SUS 329J3L                                                                               | 2377                                                                                      | 2205                                                                                                 | 3.1      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | 2327                                                                                      | 2304                                                                                                 | 3.1      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | 255                                                                                                  | 3.1      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | 255                                                                                                  | 3.1      |
|  | -                                                                                        | -                                                                                        | SCS 14A                                                                                  | 2328                                                                                      | 2507                                                                                                 | 4.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | <b>M</b> |
|  | X 12 Cr 13                                                                               | F.3401                                                                                   | SUS 410                                                                                  | 2302                                                                                      | 410; CA-15                                                                                           | 1.1      |
|  | X 12 CrS 13                                                                              | -                                                                                        | SUS 416                                                                                  | 2380                                                                                      | 416                                                                                                  | 1.1      |
|  | X 20 Cr 13                                                                               | -                                                                                        | SUS 420 J 1                                                                              | 2303                                                                                      | 420                                                                                                  | 1.1      |
|  | X 30 Cr 13                                                                               | -                                                                                        | SUS 420 J 2                                                                              | 2304                                                                                      | 420                                                                                                  | 1.1      |
|  | X 40 Cr 14                                                                               | -                                                                                        | SUS 420 J 2                                                                              | 2304                                                                                      | 420                                                                                                  | 1.1      |
|  | X 40 Cr 14                                                                               | F.3405                                                                                   | SUS 420 J 2                                                                              | 2304                                                                                      | 420                                                                                                  | 1.1      |
|  | -                                                                                        | F-3422                                                                                   | -                                                                                        | -                                                                                         | -                                                                                                    | 1.1      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 1.1      |
|  | -                                                                                        | -                                                                                        | SUS 410J1                                                                                | -                                                                                         | 420                                                                                                  | 1.1      |
|  | X 14 CrS 17                                                                              | F-3431                                                                                   | SUS 430 F                                                                                | 2383                                                                                      | 430 F                                                                                                | 1.1      |
|  | X 16 CrNi 16                                                                             | F-3427                                                                                   | SUS 431                                                                                  | 2321                                                                                      | 431                                                                                                  | 1.1      |
|  | X 80 CrSiNi 20                                                                           | F.320.B                                                                                  | SUH 4                                                                                    | -                                                                                         | HNV 6                                                                                                | 1.1      |
|  | X 105 CrMo 17                                                                            | -                                                                                        | SUS 440 C                                                                                | -                                                                                         | 440 C                                                                                                | 1.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 1.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | 440B                                                                                                 | 1.1      |
|  |                                                                                          |                                                                                          | SUS431                                                                                   |                                                                                           | 431                                                                                                  | 1.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | F899                                                                                                 | 1.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 1.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | S42400                                                                                               | 1.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | K92460                                                                                               | 1.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | F91; K90901                                                                                          | 1.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 1.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 1.1      |
|  | X 6 CrNi 13 04                                                                           | -                                                                                        | SCS 5                                                                                    | 2385                                                                                      | CA 6-NM                                                                                              | 3.1      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | 2387                                                                                      | -                                                                                                    | 3.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | Jethete M-152                                                                                        | 3.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | XM-32                                                                                                | 3.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 3.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 3.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | <b>M</b> |
|  | -                                                                                        | -                                                                                        | SUS 631                                                                                  | 2388                                                                                      | 631                                                                                                  | 3.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 3.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | A564, A564-M, A705 F899                                                                              | 3.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 3.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 3.1      |
|  | -                                                                                        | -                                                                                        | SCS 630                                                                                  | -                                                                                         | 630                                                                                                  | 4.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | A564; F899                                                                                           | 4.1      |

|          | R <sub>m</sub><br>[N/mm <sup>2</sup> ]                                                       | Rockwell<br>[HRC] |  Mat.-Nr. |  AFNOR |  BS | EN              |         |
|----------|----------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------|---------|
|          |                                                                                              |                   | DIN                                                                                        |                                                                                           |                                                                                        |                 |         |
| 4.1      | 930 - 1180                                                                                   |                   | 1.4944                                                                                     | X6NiCrTiMoV26-15                                                                          |                                                                                        |                 |         |
| <b>K</b> | <b>Gusseisen mit Lamellengrafit (GJL) · Cast iron with lamellar graphite (GJL)</b>           |                   |                                                                                            |                                                                                           |                                                                                        |                 |         |
| 1.1      | 100 - 200                                                                                    |                   | 0.6010                                                                                     | EN-GJL100 (GG10)                                                                          | Ft 10 D                                                                                | -               | -       |
| 1.1      | 150 - 250                                                                                    |                   | 0.6015                                                                                     | EN-GJL150 (GG15)                                                                          | Ft 15 D                                                                                | Grade 150       | -       |
| 1.1      | > 170                                                                                        |                   | 0.6655                                                                                     | GGL-NiCuCr15-6-2                                                                          | L-NUC 15 6 2                                                                           | L-NUC 15 6 2    | -       |
| 1.1      | > 170                                                                                        |                   | 0.6660                                                                                     | GGL-NiCr20-2                                                                              | L-NC 20 2                                                                              | L-NC 20 2       | -       |
| 1.1      | > 190                                                                                        |                   | 0.6676                                                                                     | GGL-NiCr30-3                                                                              | L-NC 30 3                                                                              | L-NC 30 3       | -       |
| 1.1      | > 170                                                                                        |                   | 0.6680                                                                                     | GGL-NiSiCr30-5-5                                                                          | L-NSC 30 5 5                                                                           | L-NSC 30 5 5    | -       |
| 1.2      | 200 - 300                                                                                    |                   | 0.6020                                                                                     | EN-GJL200 (GG20)                                                                          | Ft 20 D                                                                                | Grade 220       | -       |
| 1.2      | 250 - 350                                                                                    |                   | 0.6025                                                                                     | EN-GJL250 (GG25)                                                                          | Ft 25 D                                                                                | Grade 260       | -       |
| 1.2      | 300 - 400                                                                                    |                   | 0.6030                                                                                     | EN-GJL300 (GG30)                                                                          | Ft 30 D                                                                                | Grade 300       | -       |
| 1.2      | 350 - 450                                                                                    |                   | 0.6035                                                                                     | EN-GJL350 (GG35)                                                                          | Ft 35 D                                                                                | Grade 350       | -       |
| 1.2      | 400 - 500                                                                                    |                   | 0.6040                                                                                     | EN-GJLZ (GG40)                                                                            | Ft 40 D                                                                                | Grade 400       | -       |
| <b>K</b> | <b>Gusseisen mit Kugelgrafit (GJS) · Cast iron with nodular graphite (GJS)</b>               |                   |                                                                                            |                                                                                           |                                                                                        |                 |         |
| 2.1      | 370 - 400                                                                                    |                   | 0.7040                                                                                     | EN-GJS-400-15 (GGG40)                                                                     | FGS 400-12                                                                             | SNG 420/12      | -       |
| 2.1      | 420 - 500                                                                                    |                   | 0.7050                                                                                     | EN-GJS-500-7 (GGG50)                                                                      | FGS 500-7                                                                              | SNG 500/7       | -       |
| 2.1      | 370 - 480                                                                                    |                   | 0.7660                                                                                     | GGG-NiCr20-2                                                                              | S-NC 20 2                                                                              | S-NiCr 20 2     | -       |
| 2.1      | > 390                                                                                        |                   | 0.7661                                                                                     | GGG-NiCr20-3                                                                              | S-NC 20 3                                                                              | S-NiCr 20 3     | -       |
| 2.1      | 370 - 450                                                                                    |                   | 0.7670                                                                                     | EN-GJSA-XNi22                                                                             | S-N 22                                                                                 | S-Ni 22         | -       |
| 2.1      | 440 - 480                                                                                    |                   | 0.7673                                                                                     | EN-GJSA-XNiMn23-4                                                                         | S-NM 23 4                                                                              | S-NiMn 23 4     | -       |
| 2.1      | 370 - 480                                                                                    |                   | 0.7676                                                                                     | EN-GJSA-XNiCr30-3                                                                         | S-NC 30 3                                                                              | S-NiCr 30 3     | -       |
| 2.1      | > 370                                                                                        |                   | 0.7677                                                                                     | GGG-NiCr301                                                                               | S-NC 30 1                                                                              | S-NiCr 30 1     | -       |
| 2.1      | 390 - 500                                                                                    |                   | 0.7680                                                                                     | EN-GJSA-XNiSiCr30-5-5                                                                     | S-NSC 30 5 5                                                                           | S-NiSiCr 30 5 5 | -       |
| 2.1      | 370 - 420                                                                                    |                   | 0.7683                                                                                     | EN-GJSA-XNi35                                                                             | S-N 35                                                                                 | S-Ni 35         | -       |
| 2.1      | 370 - 450                                                                                    |                   | 0.7685                                                                                     | EN-GJSA-XNiCr35-3                                                                         | S-NC 35 3                                                                              | S-NiCr 35 3     | -       |
| 2.2      | 550 - 600                                                                                    |                   | 0.7060                                                                                     | EN-GJS-600-3 (GGG60)                                                                      | FGS 600-3                                                                              | SNG 600/3       | -       |
| 2.2      | 660 - 700                                                                                    |                   | 0.7070                                                                                     | EN-GJS-700-2 (GGG70)                                                                      | FGS 700-2                                                                              | SNG 700/2       | -       |
| 2.2      | 800                                                                                          |                   | 0.7080                                                                                     | EN-GJS-800-2 (GGG80)                                                                      | FGS 800-2                                                                              | SNG 800/2       | -       |
| <b>K</b> | <b>Gusseisen mit Vermiculargrafit (GJV) · Cast iron with vermicular graphite (GJV)</b>       |                   |                                                                                            |                                                                                           |                                                                                        |                 |         |
| 3.1      | 300-375                                                                                      |                   |                                                                                            | EN-GJV300                                                                                 | -                                                                                      | -               | -       |
| 3.2      | 350-425                                                                                      |                   |                                                                                            | EN-GJV350                                                                                 | -                                                                                      | -               | -       |
| 3.2      | 400-475                                                                                      |                   |                                                                                            | EN-GJV400                                                                                 | -                                                                                      | -               | -       |
| 3.2      | 450-525                                                                                      |                   |                                                                                            | EN-GJV450                                                                                 | -                                                                                      | -               | -       |
| 3.2      | 500-575                                                                                      |                   |                                                                                            | EN-GJV500                                                                                 | -                                                                                      | -               | -       |
| <b>K</b> | <b>Temperguss (GTMW, GTMB) · Malleable cast iron (GTMW, GTMB)</b>                            |                   |                                                                                            |                                                                                           |                                                                                        |                 |         |
| 4.1      | > 350                                                                                        |                   | 0.8135                                                                                     | EN-GJMB-350-10                                                                            | MN35-10                                                                                | B340/12         | -       |
| 4.1      | > 450                                                                                        |                   | 0.8145                                                                                     | EN-GJMB-450-6                                                                             | -                                                                                      | P440/7          | -       |
| 4.1      | 270 - 360                                                                                    |                   | 0.8035                                                                                     | EN-GJMW-350-4                                                                             | MB35-7                                                                                 | W340/3          | -       |
| 4.1      | 300 - 420                                                                                    |                   | 0.8040                                                                                     | EN-GJMW-400-5                                                                             | MB40-10                                                                                | W410/4          | -       |
| 4.1      | 330 - 480                                                                                    |                   | 0.8045                                                                                     | EN-GJMW-450-7                                                                             | -                                                                                      | -               | -       |
| 4.2      | > 550                                                                                        |                   | 0.8155                                                                                     | EN-GJMB-550-4                                                                             | MP50-5                                                                                 | P510/4          | -       |
| 4.2      | > 650                                                                                        |                   | 0.8165                                                                                     | EN-GJMB-650-2                                                                             | MP60-3                                                                                 | P570/3          | -       |
| 4.2      | > 700                                                                                        |                   | 0.8170                                                                                     | EN-GJMB-700-2                                                                             | M870-2                                                                                 | P690/2          | -       |
| 4.2      | 490 - 570                                                                                    |                   | 0.8055                                                                                     | EN-GJMW-550-4                                                                             | -                                                                                      | -               | -       |
| <b>N</b> | <b>Aluminium unlegiert · Unalloyed aluminium</b>                                             |                   |                                                                                            |                                                                                           |                                                                                        |                 |         |
| 1.1      | 65 - 150                                                                                     |                   | 3.0225                                                                                     | Al99.5                                                                                    | A5                                                                                     | 1B              | -       |
| 1.1      | 40 - 100                                                                                     |                   | 3.0305                                                                                     | Al99.9                                                                                    | A9                                                                                     | -               | -       |
| <b>N</b> | <b>Aluminium-Knetlegierungen, nicht ausgehärtet · Wrought aluminium alloys, not hardened</b> |                   |                                                                                            |                                                                                           |                                                                                        |                 |         |
| 1.1      | 100 - 125                                                                                    |                   | 3.0505                                                                                     | AlMn0.5Mg0.5                                                                              | -                                                                                      | N31             | -       |
| 1.1      | 100 - 205                                                                                    |                   | 3.3315                                                                                     | AlMg1                                                                                     | A-G0,6                                                                                 | N41             | -       |
| 1.2      | 80 - 230                                                                                     |                   | 3.0515                                                                                     | AlMn1                                                                                     | -                                                                                      | N3              | -       |
| 1.2      | 115 - 290                                                                                    |                   | 3.0525                                                                                     | AlMn1Mg0.5                                                                                | A-M1G0,5                                                                               | -               | -       |
| 1.2      | 180 - 310                                                                                    |                   | 3.3535                                                                                     | AlMg3                                                                                     | A-G3M                                                                                  | N5              | -       |
| 1.2      | 230 - 260                                                                                    |                   | 3.3547                                                                                     | AlMg4,5Mn0,7                                                                              | -                                                                                      | NB              | AW-5083 |
| 1.2      | 150 - 290                                                                                    |                   | 3.3214                                                                                     | AlMg1SiCu                                                                                 | -                                                                                      | -               | AW-6061 |
| 1.3      | 220 - 455                                                                                    |                   | 3.4354                                                                                     | AlZn5,5MgCuAg                                                                             | -                                                                                      | -               | AW-7009 |
| 1.3      | 330 - 370                                                                                    |                   | 3.1645                                                                                     | AlCu4PbMgMn                                                                               | -                                                                                      | -               | AW-2007 |
| 1.3      | 340 - 370                                                                                    |                   | 3.1364                                                                                     | AlCu4PbMgMn                                                                               | -                                                                                      | -               | AW-2007 |
| 1.3      | 470 - 510                                                                                    |                   | 3.3144                                                                                     | AlZn6CuMgZr                                                                               | -                                                                                      | -               | AW-7050 |
| 1.3      | 420 - 480                                                                                    |                   | 3.4364                                                                                     | AlZn5,5MgCu                                                                               | -                                                                                      | -               | AW-7075 |
| 1.3      | 220 - 450                                                                                    |                   | 3.1354                                                                                     | AlCu4Mg1                                                                                  | -                                                                                      | -               | AW-2024 |
| <b>N</b> | <b>Aluminium Knetlegierungen, ausgehärtet · Wrought aluminium alloys, hardened</b>           |                   |                                                                                            |                                                                                           |                                                                                        |                 |         |
| 1.2      | 130 - 270                                                                                    |                   | 3.3206                                                                                     | AlMgSi0.5                                                                                 | -                                                                                      | H9              | -       |
| 1.2      | 120 - 300                                                                                    |                   | 3.3211                                                                                     | AlMg1SiCu                                                                                 | -                                                                                      | H20             | -       |
| 1.3      | 150 - 400                                                                                    |                   | 3.1325                                                                                     | AlCuMg1                                                                                   | A-U4G                                                                                  | H14             | -       |
| 1.3      | 180 - 460                                                                                    |                   | 3.1355                                                                                     | AlCuMg2                                                                                   | A-U4G1                                                                                 | 2L97            | -       |
| 1.3      | 130 - 360                                                                                    |                   | 3.2315                                                                                     | AlMgSi1                                                                                   | A-SGM0,7                                                                               | H30             | -       |
| 1.3      | 410 - 490                                                                                    |                   | 3.4345                                                                                     | AlZnMgCu0.5                                                                               | AZ 4 GU/9051                                                                           | L86             | -       |
| 1.3      | 180 - 560                                                                                    |                   | 3.4365                                                                                     | AlZnMgCu1.5                                                                               | AZ 4 GU/9050 C                                                                         | L87             | -       |
| <b>N</b> | <b>Aluminium-Gusslegierungen Si ≤ 7% · Aluminium cast alloys Si ≤ 7%</b>                     |                   |                                                                                            |                                                                                           |                                                                                        |                 |         |
| 1.4      | 280 - 300                                                                                    |                   | 3.2134                                                                                     | G-AlSi5Cu1Mg                                                                              | -                                                                                      | -               | -       |
| 1.4      | 140 - 300                                                                                    |                   | 3.3241                                                                                     | G-AlMg3Si                                                                                 | -                                                                                      | -               | -       |
| 1.4      | 200                                                                                          |                   | 3.3292                                                                                     | GD-AlMg9                                                                                  | A-G10S                                                                                 | -               | -       |
| 1.4      | 140 - 210                                                                                    |                   | 3.3541                                                                                     | GD-AlMg3                                                                                  | A-G3T                                                                                  | -               | -       |
| <b>N</b> | <b>Aluminium-Gusslegierungen 7% &lt; Si ≤ 12% · Aluminium cast alloys 7% &lt; Si ≤ 12%</b>   |                   |                                                                                            |                                                                                           |                                                                                        |                 |         |
| 1.5      | 160 - 200                                                                                    |                   | 3.2161                                                                                     | G-AlSi8Cu3                                                                                | -                                                                                      | -               | -       |



|  | <br>UNI | <br>UNE | <br>JIS | <br>SIS | <br>AISI/SAE/ASTM |          |
|--|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|----------|
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | 660; Alloy A-286                                                                                     | 4.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | <b>K</b> |
|  | G 10                                                                                     | -                                                                                        | FC 10                                                                                    | 01 10-00                                                                                  | A48-20 B                                                                                             | 1.1      |
|  | G 15                                                                                     | FG 15                                                                                    | FC 15                                                                                    | 01 15-00                                                                                  | A48-25 B                                                                                             | 1.1      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | A-436 Type 1                                                                                         | 1.1      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | A-436 Type 2                                                                                         | 1.1      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | A-436 Type 3                                                                                         | 1.1      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | A-436 Type 4                                                                                         | 1.1      |
|  | G 20                                                                                     | FG 20                                                                                    | FC 20                                                                                    | 01 200                                                                                    | A48-30 B                                                                                             | 1.2      |
|  | G 25                                                                                     | FG 25                                                                                    | FC 25                                                                                    | 01 250                                                                                    | A48-40 B                                                                                             | 1.2      |
|  | G 30                                                                                     | FG 30                                                                                    | FC 30                                                                                    | 1 300                                                                                     | A48-45 B                                                                                             | 1.2      |
|  | G 35                                                                                     | FG 35                                                                                    | FC 35                                                                                    | 1 350                                                                                     | A48-50 B                                                                                             | 1.2      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | 1 400                                                                                     | A48-60 B                                                                                             | 1.2      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | <b>K</b> |
|  | GS 400-12                                                                                | GGG 40                                                                                   | FCD 40                                                                                   | 0717-02                                                                                   | 60-40-18                                                                                             | 2.1      |
|  | GS 500/7                                                                                 | GGG 50                                                                                   | FCD 50                                                                                   | 0727-02                                                                                   | 65-45-12                                                                                             | 2.1      |
|  | -                                                                                        | F 43000                                                                                  | -                                                                                        | -                                                                                         | A 439 Type D-2                                                                                       | 2.1      |
|  | -                                                                                        | F 43001                                                                                  | -                                                                                        | -                                                                                         | A 439 Type D-2B                                                                                      | 2.1      |
|  | -                                                                                        | F 43002                                                                                  | -                                                                                        | -                                                                                         | A 439 Type D-2C                                                                                      | 2.1      |
|  | -                                                                                        | F 43003                                                                                  | -                                                                                        | -                                                                                         | A 439 Type D-2M                                                                                      | 2.1      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | A 439 Type D-3                                                                                       | 2.1      |
|  | -                                                                                        | F 43004                                                                                  | -                                                                                        | -                                                                                         | A 439 Type D-3A                                                                                      | 2.1      |
|  | -                                                                                        | F 43005                                                                                  | -                                                                                        | -                                                                                         | A 439 Type D-4                                                                                       | 2.1      |
|  | -                                                                                        | F 43006                                                                                  | -                                                                                        | -                                                                                         | A 439 Type D-5                                                                                       | 2.1      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | A 439 Type D-5B                                                                                      | 2.1      |
|  | GS 600/3                                                                                 |                                                                                          | FCD 60                                                                                   | 0732-03                                                                                   | 80-55-06                                                                                             | 2.2      |
|  | GS 700/2                                                                                 | GGG 70                                                                                   | FCD 70                                                                                   | 0737-01                                                                                   | 100-70-03                                                                                            | 2.2      |
|  | GS 800/2                                                                                 | -                                                                                        | -                                                                                        | -                                                                                         | 120-90-02                                                                                            | 2.2      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | <b>K</b> |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.1      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.2      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.2      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.2      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 3.2      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | <b>K</b> |
|  | -                                                                                        | GTS 35                                                                                   | -                                                                                        | 0810                                                                                      | 32510                                                                                                | 4.1      |
|  | -                                                                                        | GTS 45                                                                                   | -                                                                                        | 0852                                                                                      | 40010                                                                                                | 4.1      |
|  | -                                                                                        | GTW 35                                                                                   | FCMW 330                                                                                 | -                                                                                         | MB 350-4                                                                                             | 4.1      |
|  | GMB 40                                                                                   | GTW 40                                                                                   | FCMW 370                                                                                 | -                                                                                         | MB 400-5                                                                                             | 4.1      |
|  | GMB 45                                                                                   | GTW 45                                                                                   | FCMWP 440                                                                                | -                                                                                         | MB 450-7                                                                                             | 4.1      |
|  | -                                                                                        | GTS 55                                                                                   | -                                                                                        | 0854                                                                                      | 50005                                                                                                | 4.2      |
|  | -                                                                                        | GTS 65                                                                                   | -                                                                                        | 0856                                                                                      | 70003                                                                                                | 4.2      |
|  | -                                                                                        | GTS 70                                                                                   | -                                                                                        | 0862; 0864                                                                                | 90001                                                                                                | 4.2      |
|  | -                                                                                        | GTW 55                                                                                   | -                                                                                        | -                                                                                         | -                                                                                                    | 4.2      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | <b>N</b> |
|  | 4507                                                                                     | L-3051                                                                                   | A1x1                                                                                     | -                                                                                         | -                                                                                                    | 1.1      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 1.1      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | <b>N</b> |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | 3105                                                                                                 | 1.1      |
|  | 5764                                                                                     | L-3350                                                                                   | A2x8                                                                                     | 144106                                                                                    | -                                                                                                    | 1.1      |
|  | 3568                                                                                     | L-3810                                                                                   | 144054                                                                                   | -                                                                                         | -                                                                                                    | 1.2      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 1.2      |
|  | 3575                                                                                     | L-3390                                                                                   | -                                                                                        | -                                                                                         | -                                                                                                    | 1.2      |
|  |                                                                                          | L-3321                                                                                   | A5083                                                                                    |                                                                                           | A95083                                                                                               | 1.2      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 1.2      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 1.3      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 1.3      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 1.3      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           | B-209; B211                                                                                          | 1.3      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | 1.3      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | <b>N</b> |
|  | 3569                                                                                     | L-3441                                                                                   | A2x5                                                                                     | 144103                                                                                    | -                                                                                                    | 1.2      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 1.2      |
|  | 3579                                                                                     | L-3120                                                                                   | -                                                                                        | -                                                                                         | -                                                                                                    | 1.3      |
|  | 3579                                                                                     | L-3140                                                                                   | A3x4                                                                                     | -                                                                                         | -                                                                                                    | 1.3      |
|  | 3571                                                                                     | L-3451                                                                                   | -                                                                                        | 144212                                                                                    | -                                                                                                    | 1.3      |
|  | 811-04                                                                                   | -                                                                                        | -                                                                                        | -                                                                                         | 7050                                                                                                 | 1.3      |
|  | 811-05                                                                                   | -                                                                                        | -                                                                                        | -                                                                                         | 7175                                                                                                 | 1.3      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | <b>N</b> |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 1.4      |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 1.4      |
|  | 5080                                                                                     | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 1.4      |
|  | 3059                                                                                     | -                                                                                        | ADC6                                                                                     | -                                                                                         | -                                                                                                    | 1.4      |
|  |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                      | <b>N</b> |
|  | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                    | 1.5      |

|                                                                                                             | R <sub>m</sub><br>[N/mm <sup>2</sup> ] | Rockwell<br>[HRC] | Mat.-Nr.     | DIN                                                                               | AFNOR                                                                               | BS                                                                                  | EN |  |
|-------------------------------------------------------------------------------------------------------------|----------------------------------------|-------------------|--------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----|--|
|                                                                                                             |                                        |                   |              |  |  |  |    |  |
| 1.5                                                                                                         | 230 - 360                              |                   | 3.2373       | G-AlSi9Mg                                                                         | A-S9G                                                                               | -                                                                                   | -  |  |
| 1.5                                                                                                         | 240 - 350                              |                   | 3.2163       | G-AlSi9Cu3                                                                        | A-S9U3                                                                              | LM24                                                                                | -  |  |
| 1.5                                                                                                         | 150 - 340                              |                   | 3.2381       | G-AlSi10Mg                                                                        | A-S10G                                                                              | LM9                                                                                 | -  |  |
| 1.5                                                                                                         | 160                                    |                   | 3.2383       | G-AlSi10Mg(Cu)                                                                    | A-S10GU                                                                             | LM 9                                                                                | -  |  |
| 1.5                                                                                                         | 150 - 170                              |                   | 3.2581       | G-AlSi12                                                                          | A-S13                                                                               | LM 6                                                                                | -  |  |
| 1.5                                                                                                         | 150 - 290                              |                   | 3.2583       | G-AlSi12(Cu)                                                                      | A-S12U                                                                              | LM 20                                                                               | -  |  |
| <b>N Aluminium-Gusslegierungen Si &gt; 12% · Aluminium cast alloys Si &gt; 12%</b>                          |                                        |                   |              |                                                                                   |                                                                                     |                                                                                     |    |  |
| 1.6                                                                                                         | 165 - 370                              |                   |              | G-AlSi17Cu4Mg                                                                     | -                                                                                   | -                                                                                   | -  |  |
| 1.6                                                                                                         | 180 - 220                              |                   |              | G-AlSi18CuNiMg                                                                    | -                                                                                   | -                                                                                   | -  |  |
| 1.6                                                                                                         | 200 - 240                              |                   |              | G-AlSi21CuNiMg                                                                    | -                                                                                   | -                                                                                   | -  |  |
| 1.6                                                                                                         | 230 - 300                              |                   |              | G-AlSi25CuNiMg                                                                    | -                                                                                   | -                                                                                   | -  |  |
| <b>N Reinkupfer, niedriglegiertes Kupfer · Pure copper, low-alloyed copper</b>                              |                                        |                   |              |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.2                                                                                                         | < 600                                  |                   | 2.0240       | CuZn15                                                                            | CuZn15                                                                              | CZ 102                                                                              | -  |  |
| 2.2                                                                                                         | < 800                                  |                   | 2.0265       | CuZn30                                                                            | CuZn30                                                                              | CZ 106                                                                              | -  |  |
| <b>N Kupfer-Zink-Legierungen (Messing, langspanend) · Copper-zinc alloys (brass, long-chipping)</b>         |                                        |                   |              |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.2                                                                                                         | < 800                                  |                   | 2.0321       | CuZn37                                                                            | CuZn37                                                                              | CZ 108                                                                              | -  |  |
| 2.2                                                                                                         | < 800                                  |                   | 2.0335       | CuZn36                                                                            | Ms63                                                                                | CZ 108                                                                              | -  |  |
| 2.2                                                                                                         | 340 - 480                              |                   | 2.0360       | CuZn40                                                                            | Ms60                                                                                | DCB1                                                                                | -  |  |
| <b>N Kupfer-Zink-Legierungen (Messing, kurzspanend) · Copper-zinc alloys (brass, short-chipping)</b>        |                                        |                   |              |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.3                                                                                                         | 340 - 570                              |                   | 2.0401       | CuZn39Pb3                                                                         | Ms58                                                                                | -                                                                                   | -  |  |
| <b>N Kupfer-Zinn-Legierungen (Zinnbronze, langspanend) · Copper-tin alloys (tin bronze, long-chipping)</b>  |                                        |                   |              |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.5                                                                                                         | < 900                                  |                   | 2.1016       | CuSn4                                                                             | -                                                                                   | -                                                                                   | -  |  |
| 2.5                                                                                                         | 390 - 620                              |                   | 2.1030       | CuSn8P                                                                            | -                                                                                   | -                                                                                   | -  |  |
| <b>N Kupfer-Zinn-Legierungen (Zinnbronze, kurzspanend) · Copper-tin alloys (tin bronze, short-chipping)</b> |                                        |                   |              |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.6                                                                                                         | 200 - 250                              |                   | 2.1097       | G-CuSn5ZnPb                                                                       | Rg5                                                                                 | -                                                                                   | -  |  |
| 2.6                                                                                                         | 230 - 320                              |                   | 2.1090.01    | G-CuSn7ZnPb                                                                       | Rg7                                                                                 | -                                                                                   | -  |  |
| 2.6                                                                                                         | 280                                    |                   | 2.1086.01    | G-CuSn10Zn                                                                        | Rg10                                                                                | -                                                                                   | -  |  |
| 2.6                                                                                                         | 600 - 650                              |                   | 2.0975       | G-CuAl10Ni                                                                        | CuNiAl11                                                                            | -                                                                                   | -  |  |
| <b>N Kupfer-Aluminium-Legierungen (Alubronze) · Copper-aluminium alloys (alu bronze)</b>                    |                                        |                   |              |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.7                                                                                                         | > 550                                  |                   | Ampco 8      | -                                                                                 | -                                                                                   | -                                                                                   | -  |  |
| 2.7                                                                                                         | > 500                                  |                   | Ampco 25     | -                                                                                 | -                                                                                   | -                                                                                   | -  |  |
| 2.7                                                                                                         | 440                                    |                   | Ampco 26     |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.7                                                                                                         | 517                                    |                   | Ampco 673    |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | > 750                                  |                   | Ampco 21     | -                                                                                 | -                                                                                   | -                                                                                   | -  |  |
| 2.8                                                                                                         | > 810                                  |                   | Ampco 45     | -                                                                                 | -                                                                                   | -                                                                                   | -  |  |
| 2.8                                                                                                         | > 1000                                 |                   | Ampco M-4    | -                                                                                 | -                                                                                   | -                                                                                   | -  |  |
| 2.8                                                                                                         | 890                                    |                   | Ampco 15     |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 650 - 750                              |                   | Ampco 18     |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 690                                    |                   | Ampco 18.136 |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 793                                    |                   | Ampco 18.22  |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 741                                    |                   | Ampco 18.23  |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 724                                    |                   | Ampco 22     |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 605                                    |                   | Ampco 483    |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 620                                    |                   | Ampco 642    |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 620                                    |                   | Ampco 674    |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 724                                    |                   | Ampco 863    |                                                                                   |                                                                                     |                                                                                     |    |  |
| <b>N Hochleitfähige Kupferlegierung · Highly conductive copper alloy</b>                                    |                                        |                   |              |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.7                                                                                                         | 200                                    |                   | Ampcoloy 30  |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.7                                                                                                         | 210                                    |                   | Ampcoloy 32  |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.7                                                                                                         | 250                                    |                   | Ampcoloy 35  |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.7                                                                                                         | 300                                    |                   | Ampcoloy 712 |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.7                                                                                                         | 465 - 520                              |                   | Ampcoloy 972 |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 1310                                   |                   | Ampcoloy 83  |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 890                                    |                   | Ampcoloy 88  |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 740                                    |                   | Ampcoloy 89  |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 720 - 900                              |                   | Ampcoloy 91  |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 720 - 850                              |                   | Ampcoloy 95  |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 660 - 690                              |                   | Ampcoloy 940 |                                                                                   |                                                                                     |                                                                                     |    |  |
| 2.8                                                                                                         | 938                                    |                   | Ampcoloy 944 |                                                                                   |                                                                                     |                                                                                     |    |  |
| <b>N Magnesium-Knetlegierungen · Magnesium wrought alloys</b>                                               |                                        |                   |              |                                                                                   |                                                                                     |                                                                                     |    |  |
| 3.1                                                                                                         | > 270                                  |                   | 3.5612       | MgAl6Zn                                                                           | -                                                                                   | -                                                                                   | -  |  |
| 3.2                                                                                                         | > 240                                  |                   | 3.5912       | G-MgAl9Zn1                                                                        | -                                                                                   | -                                                                                   | -  |  |
| <b>N Kunststoffe · Synthetics</b>                                                                           |                                        |                   |              |                                                                                   |                                                                                     |                                                                                     |    |  |
| 4.1                                                                                                         |                                        |                   | Bakelit      | -                                                                                 | -                                                                                   | -                                                                                   | -  |  |
| 4.1                                                                                                         |                                        |                   | Pertinax     | -                                                                                 | -                                                                                   | -                                                                                   | -  |  |
| 4.2                                                                                                         |                                        |                   | PMMA         | -                                                                                 | -                                                                                   | -                                                                                   | -  |  |
| 4.2                                                                                                         |                                        |                   | POM          | -                                                                                 | -                                                                                   | -                                                                                   | -  |  |
| 4.2                                                                                                         |                                        |                   | PVC          | -                                                                                 | -                                                                                   | -                                                                                   | -  |  |
| <b>N Faserverstärkte Kunststoffe · Fibre-reinforced synthetics</b>                                          |                                        |                   |              |                                                                                   |                                                                                     |                                                                                     |    |  |
| 4.3                                                                                                         | 155 - 365                              |                   | GFK          | -                                                                                 | -                                                                                   | -                                                                                   | -  |  |
| 4.3                                                                                                         | 190 - 210                              |                   | CFK uni.     | -                                                                                 | -                                                                                   | -                                                                                   | -  |  |
| 4.3                                                                                                         | 190 - 210                              |                   | CFK multi.   | -                                                                                 | -                                                                                   | -                                                                                   | -  |  |
| 4.3                                                                                                         |                                        |                   | AFK          | -                                                                                 | -                                                                                   | -                                                                                   | -  |  |
| <b>N Wolfram Kupfer Legierung · Tungsten copper alloy</b>                                                   |                                        |                   |              |                                                                                   |                                                                                     |                                                                                     |    |  |
| 5.2                                                                                                         | 344 - 413                              |                   | WCu 50/50    |                                                                                   |                                                                                     |                                                                                     |    |  |
| 5.2                                                                                                         | 379 - 448                              |                   | WCu 60/40    |                                                                                   |                                                                                     |                                                                                     |    |  |



**EMUGE**  
**FRANKEN**



|          | R <sub>m</sub><br>[N/mm <sup>2</sup> ]                                                       | Rockwell<br>[HRC] | Mat.-Nr.            | DIN                    | AFNOR                       | BS            | EN |  |
|----------|----------------------------------------------------------------------------------------------|-------------------|---------------------|------------------------|-----------------------------|---------------|----|--|
| 5.2      | 516 - 585                                                                                    |                   | WCu 70/30           |                        |                             |               |    |  |
| 5.2      | 585 - 654                                                                                    |                   | WCu 75/25           |                        |                             |               |    |  |
| 5.2      | 620 - 689                                                                                    |                   | WCu 80/20           |                        |                             |               |    |  |
| 5.2      | 700                                                                                          |                   | WCu 90/10           |                        |                             |               |    |  |
| <b>N</b> | <b>Grafit · Graphite</b>                                                                     |                   |                     |                        |                             |               |    |  |
| 5.1      |                                                                                              |                   | ISEM-8              | VDI 23 - 28            |                             |               |    |  |
| 5.1      |                                                                                              |                   | ISO-63              | VDI 21 - 26            |                             |               |    |  |
| 5.1      |                                                                                              |                   | TTK-4               | VDI 19 - 23            |                             |               |    |  |
| 5.1      |                                                                                              |                   | TTK-5               | VDI 18 - 22            |                             |               |    |  |
| 5.1      |                                                                                              |                   | TTK-50              | VDI 22 - 27            |                             |               |    |  |
| 5.1      |                                                                                              |                   | TTK-8               | VDI 15 - 21            |                             |               |    |  |
| 5.1      |                                                                                              |                   | TTK-9               | VDI 15 - 21            |                             |               |    |  |
| <b>S</b> | <b>Nickel-, Kobalt- und Eisen-Legierungen · Nickel alloys, cobalt alloys and iron alloys</b> |                   |                     |                        |                             |               |    |  |
| 2.2      | 500 - 700                                                                                    |                   | 2.4360              | NiCu30Fe               | Nu 30                       | NA 13         | -  |  |
| 2.2      | 620 - 850                                                                                    |                   | 2.4375              | NiCu30Al               | Nu 30 AT                    | NA 18         | -  |  |
| 2.2      | > 690                                                                                        |                   | 2.4685              | G-NiMo28               | -                           | -             | -  |  |
| 2.2      | > 740                                                                                        |                   | 2.4610              | NiMo16Cr16Ti           | -                           | -             | -  |  |
| 2.2      | > 760                                                                                        |                   | 2.4617              | G-NiMo30               | -                           | -             | -  |  |
| 2.2      | 700 - 800                                                                                    |                   | 2.4630, 2.4951      | NiCr20Ti               | NC 20 T                     | HR 5          | -  |  |
| 2.2      | 800 - 1000                                                                                   |                   | 2.4631              | NiCr20TiAl             | -                           | HR 401; 601   | -  |  |
| 2.2      | < 770                                                                                        |                   | 2.4662              | NiCr13Mo6Ti3           | -                           | HR 53         | -  |  |
| 2.2      | 890                                                                                          |                   | 2.4856              | NiCr22Mo9Nb            | NC 22 FeDNb                 | NA 21         | -  |  |
| 2.2      | 840                                                                                          |                   | 2.4733              | NiCr22W14Mo            | Haynes 230 alloy            |               |    |  |
| 2.2      | 740                                                                                          |                   | Haynes HR-224 alloy |                        |                             |               |    |  |
| 2.2      | 700 - 1000                                                                                   |                   | 2.4600              | NiMo29Cr               | Hastelloy B3 alloy          |               |    |  |
| 2.2      | 690 - 950                                                                                    |                   | 2.4675              | NiCr23Mo16Cu           | Hastelloy C-2000            |               |    |  |
| 2.2      | 690 - 950                                                                                    |                   | 2.4602              | NiCr21Mo14W            | Hastelloy C-22              |               |    |  |
| 2.2      | 750 - 1000                                                                                   |                   | 2.4819              | NiMo16Cr15W            | Hastelloy C-276 alloy       |               |    |  |
| 2.2      | 700 - 900                                                                                    |                   | 2.4610              | NiMo16Cr16Ti           | Hastelloy C-4 alloy         |               |    |  |
| 2.2      | 725                                                                                          |                   | 2.4708              | NiMo22Cr15             | Hastelloy Hybrid-BC-1 alloy |               |    |  |
| 2.2      | 500 - 750                                                                                    |                   | 2.4816              | NiCr15Fe               | Inconel 600                 | NA14          |    |  |
| 2.2      | 231                                                                                          |                   | 2.4676              | G-NiCo10W10CrAlNb      | MAR-M246 Alloy              |               |    |  |
| 2.2      | 900 - 1150                                                                                   |                   | 1.4980              | X5NiCrTi2615           |                             |               |    |  |
| 2.2      | <900                                                                                         |                   | 2.4812              | NiCr17Mo17FeW          | Hastelloy C                 |               |    |  |
| 2.2      | 550 - 750                                                                                    |                   | 2.4851              | NiCr23Fe               | Inconel 601                 |               |    |  |
| 2.2      | 550                                                                                          |                   | 2.4858              | NiCr21Mo               |                             | NA16          |    |  |
| 2.2      | 650 - 880                                                                                    |                   | 2.4983              | NiCr18Co18MoAlTi       | Udimet 500                  |               |    |  |
| 2.2      | >550                                                                                         |                   | 2.4608              | NiCr26MoW              | Alloy 333                   |               |    |  |
| 2.2      | >670                                                                                         |                   | 2.4633              | NiCr25FeAlY            | Alloy 602 CA                |               |    |  |
| 2.2      | >490                                                                                         |                   | 1.3912              | Ni36                   | NF A54-301                  |               |    |  |
| 2.2      | 700 - 965                                                                                    |                   | 1.3964              | X2CrNiMnMoNNb21-16-5-3 |                             |               |    |  |
| 2.2      | >690                                                                                         |                   | 2.4665              | NiCr19Fe19Nb5Mo3       | NC22FeD                     | HR204         |    |  |
| 2.2      | >970                                                                                         |                   | 2.4650              | NiCo20Cr20MoT          |                             |               |    |  |
| 2.2      | >690                                                                                         |                   | 2.4605              | NiCr23Mo16Al           |                             |               |    |  |
| 2.2      | 650 - 850                                                                                    |                   | 2.4692              | NiFeCr27Mo6CuN         |                             |               |    |  |
| 2.3      | 1200                                                                                         |                   | 2.4632              | NiCr20Co18Ti           | -                           | -             | -  |  |
| 2.3      | 1180                                                                                         |                   | 2.4634              | NiCo20Cr15MoAlTi       | -                           | -             | -  |  |
| 2.3      | 900 - 1200                                                                                   |                   | 2.4670              | -                      | -                           | -             | -  |  |
| 2.3      | 900 - 1200                                                                                   |                   | 2.4674              | -                      | -                           | -             | -  |  |
| 2.3      | 1270                                                                                         |                   | 2.6554              | -                      | -                           | -             | -  |  |
| 2.3      | < 1400                                                                                       |                   | 2.4668              | NiCr19FeNbMo           | NC 19Fe Nb                  |               | -  |  |
| 2.3      | 1132                                                                                         |                   | Haynes 282 alloy    |                        |                             |               |    |  |
| 2.3      | 1175                                                                                         |                   | 2.4654              | NiCr20Co13Mo4Ti3Al     | Waspaloy                    |               |    |  |
| 2.3      | >930                                                                                         |                   | 2.4952              | NiCr20TiAl             | Nimonic 80 A                |               |    |  |
| 2.3      | >1172                                                                                        |                   | 2.4973              | NiCr18Co11MoTi         | Rene 41                     |               |    |  |
| 2.3      | >980                                                                                         |                   | 2.4669              | NiCr15Fe7TiAl          |                             |               |    |  |
| 2.4      | <755                                                                                         |                   | 2.4989              | CoCr20NiW              |                             |               |    |  |
| 2.4      | >433                                                                                         |                   | 2.4679              | CoCr28MoNi             |                             |               |    |  |
| 2.5      | 830 - 1130                                                                                   |                   | 2.4964              | CoCr20W15Ni            |                             |               |    |  |
| 2.6      | 900 - 1100                                                                                   |                   | 1.4718              | X45CrSi9-3             | Z 45 CS 9                   | 401 S 45      | 52 |  |
| 2.6      | 500 - 750                                                                                    |                   | 1.4828              | X15CrNiSi20-12         | Z 15 CNS 20.12              | 309 S 24      | -  |  |
| 2.6      | 550 - 800                                                                                    |                   | 1.4841              | X15CrNiSi25-20         | Z 15 CNS 25.20              | -             | -  |  |
| 2.6      | 500 - 750                                                                                    |                   | 1.4845              | X12CrNi25-21           | Z 12 CN 25.20               | 310 S 24      | -  |  |
| 2.6      | 550 - 800                                                                                    |                   | 1.4864              | X12NiCrSi36-16         | Z 12 NCS 37.18              | NA 17         | -  |  |
| 2.6      | 950 - 1200                                                                                   |                   | 1.4871              | X53CrMnNiN21-9         | Z 52 CMN 21.09              | 349 S 54      | -  |  |
| 2.6      | 500 - 750                                                                                    |                   | 1.4876              | X10NiCrAlTi33-20       | Z 8 NC 32.21                | NA 15 (H)     | -  |  |
| 2.6      | 500 - 750                                                                                    |                   | 1.4878              | X12CrNiTi18-9          | Z 6 CNT 18.12 (B)           | 321 S 20      | -  |  |
| <b>S</b> | <b>Reintitan, Titanlegierungen · Pure titanium, titanium alloys</b>                          |                   |                     |                        |                             |               |    |  |
| 1.1      | 290 - 410                                                                                    |                   | 3.7025              | Ti99.5 / Ti Gr.1       | -                           | -             | -  |  |
| 1.1      | 380 - 540                                                                                    |                   | 3.7035              | Ti99.4 / Ti Gr.2       | -                           | TA 1          | -  |  |
| 1.1      | 390 - 540                                                                                    |                   | 3.7235              | Ti2Pd / Ti Gr.2Pd      | -                           | -             | -  |  |
| 1.1      | 345                                                                                          |                   | 3.7024              | Ti99.5                 | T-35                        | TA 1          |    |  |
| 1.1      | 485                                                                                          |                   | 3.7034              | Ti99.7                 | T-40                        | TA 2, 3, 4, 5 |    |  |
| 1.1      | 450                                                                                          |                   | 3.7054              | Ti99.6                 |                             |               |    |  |
| 1.2      | 460 - 590                                                                                    |                   | 3.7055              | Ti99.3 / Ti Gr.3       | -                           | TA 2          | -  |  |
| 1.2      | 540 - 740                                                                                    |                   | 3.7065              | Ti99.2 / Ti Gr.4       | -                           | TA 3          | -  |  |

|                   | <br>UNI | <br>UNE | <br>JIS | <br>SIS | <br>AIS/SAE/ASTM |          |
|-------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------|
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 5.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 5.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 5.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 5.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | <b>N</b> |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 5.1      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 5.1      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 5.1      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 5.1      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 5.1      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 5.1      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | <b>S</b> |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | Monel 400                                                                                           | 2.2      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | Monel K-500                                                                                         | 2.2      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | Hastelloy B                                                                                         | 2.2      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | Hastelloy C-4                                                                                       | 2.2      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | Hastelloy B-2                                                                                       | 2.2      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | Nimonic 75                                                                                          | 2.2      |
| -                 | -                                                                                        | -                                                                                        | NCF 80 A                                                                                 | -                                                                                         | Nimonic 80 A                                                                                        | 2.2      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | Nimonic 901                                                                                         | 2.2      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | Inconel 625                                                                                         | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | N-7M                                                                                                | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | CX2MW                                                                                               | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | CW-12MW                                                                                             | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | CW-2M                                                                                               | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | Alloy 601                                                                                           | 2.2      |
|                   |                                                                                          |                                                                                          | NCF 825                                                                                  |                                                                                           | Alloy 825; Incoloy 825; CU5MCuC                                                                     | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | B718, B719, B722; B723                                                                              | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | B166, B168, B163, B167                                                                              | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | F 1684-06                                                                                           | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | Alloy X, Inconel HX                                                                                 | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | Alloy C-263                                                                                         | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | Alloy 59                                                                                            | 2.2      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | B625; B581; B649; B564                                                                              | 2.2      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | Nimonic 90                                                                                          | 2.3      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | Nimonic 105                                                                                         | 2.3      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | Nimocast 713                                                                                        | 2.3      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | Nimocast PK 24                                                                                      | 2.3      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | Waspaloy                                                                                            | 2.3      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | Inconel 718                                                                                         | 2.3      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 2.3      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | B637                                                                                                | 2.3      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | Alloy 80A                                                                                           | 2.3      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | Alloy 41                                                                                            | 2.3      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | Alloy X-750                                                                                         | 2.3      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 2.4      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 2.4      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | Alloy 25                                                                                            | 2.5      |
| X 45 CrSi 8       | -                                                                                        |                                                                                          | SUH 1                                                                                    | -                                                                                         | HNV 3                                                                                               | 2.6      |
| -                 | -                                                                                        |                                                                                          | SUH 309                                                                                  | -                                                                                         | 309                                                                                                 | 2.6      |
| X 16 CrNiSi 25 20 | -                                                                                        |                                                                                          | SUH 310                                                                                  | -                                                                                         | 314; 310                                                                                            | 2.6      |
| X 6 CrNi 26 20    | F.331                                                                                    |                                                                                          | SUH 310; SUS 310 S                                                                       | -                                                                                         | 310 S                                                                                               | 2.6      |
| -                 | -                                                                                        |                                                                                          | SUH 330                                                                                  | -                                                                                         | 330                                                                                                 | 2.6      |
| X 53 CrMnNiN 21 9 | -                                                                                        |                                                                                          | SUH 35; SUH 36                                                                           | -                                                                                         | EV 8                                                                                                | 2.6      |
| -                 | -                                                                                        |                                                                                          | NCF 800                                                                                  | -                                                                                         | B 163                                                                                               | 2.6      |
| X 6 CrNiTi 18 11  | -                                                                                        |                                                                                          | SUS 321                                                                                  | 2337                                                                                      | 321                                                                                                 | 2.6      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | <b>S</b> |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                   | 1.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                   | 1.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                   | 1.1      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | ASTM Gr.1                                                                                           | 1.1      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           | AMS 4902, 4941; ASTM Gr.2                                                                           | 1.1      |
|                   |                                                                                          |                                                                                          |                                                                                          |                                                                                           |                                                                                                     | 1.1      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                   | 1.2      |
| -                 | -                                                                                        | -                                                                                        | -                                                                                        | -                                                                                         | -                                                                                                   | 1.2      |



|                                                                      | R <sub>m</sub><br>[N/mm <sup>2</sup> ] | Rockwell<br>[HRC] | Mat.-Nr.                   | DIN                | AFNOR       | BS            | EN        |  |
|----------------------------------------------------------------------|----------------------------------------|-------------------|----------------------------|--------------------|-------------|---------------|-----------|--|
| 1.2                                                                  | > 890                                  |                   | 3.7165                     | TiAl6V4 / Ti Gr. 5 | T-A6V       | TA 28         | -         |  |
| 1.2                                                                  | 620 - 760                              |                   | 3.7124                     | TiCu2              | T-U2        | TA 21, 22, 23 |           |  |
| 1.2                                                                  | 790                                    |                   | 3.7114                     | TiAl5Sn2           |             |               |           |  |
| 1.2                                                                  | 900                                    |                   | 3.7144                     | TiAl6Sn2Zr4Mo2     |             |               |           |  |
| 1.2                                                                  | >438                                   |                   | TITAN KS 1,2 ASN           |                    |             |               |           |  |
| 1.2                                                                  | 540 - 680                              |                   | 3.7064                     | Ti99,2             | T-60        | TA 6, 7, 8, 9 |           |  |
| 1.3                                                                  | > 1000                                 |                   | 3.7185                     | TiAl4Mo4Sn2        | -           | -             | -         |  |
| 1.3                                                                  | 1100                                   |                   | Ti6246                     | Ti6Al2Sn4Zr6Mo     |             |               |           |  |
| 1.3                                                                  | 670 - 1030                             |                   | 3.7154                     | TiAl6Zr5           | T-A6ZD      | TA 43, 44     |           |  |
| 1.3                                                                  | 930 - 1070                             |                   | 3.7184                     | TiAl4Mo4Sn2        | T-A4DE      | TA 45-51, 57  |           |  |
| 1.3                                                                  | >920                                   |                   | 3.7164                     | Ti-6Al4V           |             |               |           |  |
| 1.3                                                                  | >895                                   |                   | Ti-6Al4V-ELI               | Ti-6Al4V-ELI       |             |               |           |  |
| 1.3                                                                  | >900                                   |                   | Ti-6Al7Nb                  | Ti-6Al7Nb          |             |               |           |  |
| 1.3                                                                  | 1400                                   |                   | Ti555.3                    | Ti6Al5V5Mo3Cr      |             |               |           |  |
| <b>S Reinnickel · Pure nickel</b>                                    |                                        |                   |                            |                    |             |               |           |  |
| 2.1                                                                  | 340 - 540                              |                   | 2.4068                     | LC-Ni99            |             |               |           |  |
| 2.1                                                                  | >340                                   |                   | 2.4050                     | Ni99,8             |             |               |           |  |
| 2.1                                                                  | 450                                    |                   | 2.4060                     | Ni99,6             | N02200      |               |           |  |
| 2.2                                                                  | >450                                   |                   | 2.4360                     |                    | Monel 400   |               |           |  |
| <b>H Gehärtete Stähle, Hartguss · Hardened steels, hard castings</b> |                                        |                   |                            |                    |             |               |           |  |
| 1.1                                                                  | 1250 - 1550                            | < 50              | Weldox 1100                | -                  | -           | -             | -         |  |
| 1.1                                                                  |                                        | <48               | 1.2085                     | X33CrS16           | Z35 CD 17.S |               |           |  |
| 1.1                                                                  |                                        | 41 - 45           | 1.2714 HH                  | 55NiCrMoV7         | 55 NCDV 7   |               |           |  |
| 1.1                                                                  |                                        | 44 - 50           | 1.2358                     | 60CrMoV18-5        |             |               |           |  |
| 1.2                                                                  |                                        | 51 - 55           | 1.2397                     | ASP2011            |             |               |           |  |
| 1.2                                                                  |                                        | 53 - 55           | 1.2361                     | X91CrMoV18         |             |               |           |  |
| 1.2                                                                  |                                        | 50 - 55           | 1.2360                     | X50CrMoV8-1        |             |               |           |  |
| 1.2                                                                  |                                        | 50 - 55           | 1.2358                     | 60CrMoV18-5        |             |               |           |  |
| 1.2                                                                  | 1600 - 1800                            | < 55              | Hardox 500                 | -                  | -           | -             | -         |  |
| 1.2                                                                  | 1820 - 1900                            | < 55              | Hardox 550                 | -                  | -           | -             | -         |  |
| 1.2                                                                  | ~ 1860                                 | < 55              | 1.2713                     | 55NiCrMoV6         | 55 NCDV 7   | -             | -         |  |
| 1.2                                                                  |                                        | 53 - 56           | 1.2083 ESU                 | X40CR14            | Z40C14      |               |           |  |
| 1.2                                                                  |                                        | 54 - 55           | WP7V                       |                    |             |               |           |  |
| 1.2                                                                  |                                        | 52 - 55           | CP4M                       |                    |             |               |           |  |
| 1.2                                                                  |                                        | 55                | 1.2709                     | X3NiCoMoTi18-9-5   |             |               |           |  |
| 1.2                                                                  |                                        | 51 - 55           | ASP2011                    |                    |             |               |           |  |
| 1.2                                                                  |                                        | 53                | Thermodur E38K Superclean  |                    |             |               |           |  |
| 1.2                                                                  |                                        | 55                | Thermodur E40K Superclean  |                    |             |               |           |  |
| 1.2                                                                  |                                        | 52                | Thermodur 2383 Superclean  |                    |             |               |           |  |
| 1.2                                                                  |                                        | 53 - 55           | 1.2329                     | 46CrSiMoV7         |             |               |           |  |
| 1.2                                                                  |                                        | 53                | 1.2342                     | X35CrMoV5-1-1      |             |               |           |  |
| 1.2                                                                  |                                        | 52                | 1.2323                     | 48CrMoV67          |             |               |           |  |
| 1.3                                                                  |                                        | 60                | 1.2369                     | 81MoCrV4216        |             |               |           |  |
| 1.3                                                                  |                                        | 57                | 1.2367                     | X38CrMoV5-3        | Z38CDV5-3   |               |           |  |
| 1.3                                                                  |                                        | 56 - 58           | 1.2714                     | 55NiCrMoV7         | 55NCDV7     |               |           |  |
| 1.3                                                                  |                                        | 56 - 58           | 1.2740                     | 28NiCrMoV10        |             |               |           |  |
| 1.3                                                                  |                                        | 55 - 60           | ASP2011                    |                    |             |               |           |  |
| 1.3                                                                  |                                        | 58 - 60           | 1.3394                     | PMHS 6-5-3         |             |               | ASP2023   |  |
| 1.3                                                                  |                                        | 55 - 60           | CP4M                       |                    |             |               |           |  |
| 1.3                                                                  |                                        | 55 - 58           | WP7V                       |                    |             |               |           |  |
| 1.3                                                                  |                                        | 58 - 60           | CPR                        |                    |             |               |           |  |
| 1.3                                                                  | 1995 - 2300                            | < 60              | Armox 600T                 | -                  | -           | -             | -         |  |
| 1.3                                                                  | ~ 2100                                 | < 60              | 1.2542                     | 45WCrV7            | -           | BS 1          | -         |  |
| 1.3                                                                  |                                        | 56 - 60           | 1.3343 Plus                |                    |             |               | HS 6-5-2C |  |
| 1.3                                                                  |                                        | 58                | PMD 9                      |                    |             |               |           |  |
| 1.3                                                                  |                                        | 58 - 60           | 1.2379 Plus                |                    |             |               |           |  |
| 1.3                                                                  |                                        | 58 - 60           | CP72                       |                    |             |               |           |  |
| 1.3                                                                  |                                        | 57 - 60           | CP2M                       |                    |             |               |           |  |
| 1.3                                                                  |                                        | 59 - 60           | CPM Rex M4                 |                    |             |               |           |  |
| 1.3                                                                  |                                        | 55 - 60           | CPM Rex 121                |                    |             |               |           |  |
| 1.3                                                                  |                                        | 59 - 60           | Z-M4 PM Speed              |                    |             |               |           |  |
| 1.3                                                                  |                                        | 58 - 60           | Z-Tuff PM                  |                    |             |               |           |  |
| 1.3                                                                  |                                        | 58 - 60           | Z-Wear PM cold             |                    |             |               |           |  |
| 1.3                                                                  |                                        | 58 - 60           | Vanadis 4 Extra SuperClean |                    |             |               |           |  |
| 1.3                                                                  |                                        | 59 - 60           | 1.3352                     | PMHS 4-3-8         |             |               | ASP2053   |  |
| 1.3                                                                  |                                        | 56 - 59           | ASP 420H                   |                    |             |               |           |  |
| 1.3                                                                  |                                        | 57                | 1.2999                     | X45MoCrV5-3-1      |             |               |           |  |
| 1.3                                                                  |                                        | 55 - 60           | 1.2358                     | 60CrMoV18-5        |             |               |           |  |
| 1.3                                                                  |                                        | 55 - 60           | 1.2360                     | X50CrMoV8-1        |             |               |           |  |
| 1.3                                                                  |                                        | 55 - 58           | 1.2361                     | X91CrMoV18         |             |               |           |  |
| 1.3                                                                  |                                        | 55 - 60           | 1.2397                     | ASP2011            |             |               |           |  |
| 1.4                                                                  |                                        | 60 - 61           | 1.2397                     | ASP2011            |             |               |           |  |
| 1.4                                                                  |                                        | 60 - 63           | 1.3252                     | ASP2052            |             |               |           |  |
| 1.4                                                                  |                                        | 62 - 63           | 1.2990                     | X100CrMoV8-1-1     |             |               |           |  |
| 1.4                                                                  |                                        | 60 - 63           | 1.3352                     | PMHS 4-3-8         |             |               | ASP2053   |  |
| 1.4                                                                  |                                        | 60 - 63           | Vanadis 4 Extra SuperClean |                    |             |               |           |  |

**EMUGE**  
**FRANKEN**

|     | R <sub>m</sub><br>[N/mm <sup>2</sup> ] | Rockwell<br>[HRC] | Mat.-Nr.                   | AFNOR          | BS                      | EN          |
|-----|----------------------------------------|-------------------|----------------------------|----------------|-------------------------|-------------|
| 1.4 |                                        | 60 - 63           | Z-Wear PM cold             |                |                         |             |
| 1.4 |                                        | 60 - 62           | Z-Tuff PM                  |                |                         |             |
| 1.4 |                                        | 60 - 63           | Z-M4 PM Speed              |                |                         |             |
| 1.4 |                                        | 60 - 63           | CPM Rex 121                |                |                         |             |
| 1.4 |                                        | 60 - 63           | CPM Rex M4                 |                |                         |             |
| 1.4 |                                        | 50 - 63           | CP2M                       |                |                         |             |
| 1.4 |                                        | 60 - 62           | CP72                       |                |                         |             |
| 1.4 |                                        | 60 - 63           | 1.2379 Plus                |                |                         |             |
| 1.4 |                                        | < 63              | Ferro-Titanit              | -              | -                       | -           |
| 1.4 |                                        | < 63              | 1.2379                     | X155CrVMo12-1  | Z 160 CDV 12            | BD 2        |
| 1.4 |                                        | 60 - 63           | 1.3343 Plus                |                |                         | HS 6-5-2C   |
| 1.4 |                                        | 60 - 63           | M V10 PM                   |                |                         |             |
| 1.4 |                                        | 62 - 63           | PMD M4                     |                |                         |             |
| 1.4 |                                        | 60 - 63           | PMD 23                     |                |                         |             |
| 1.4 |                                        | 62 - 63           | PMD 30                     |                |                         |             |
| 1.4 |                                        | 62 - 63           | PMD 52                     |                |                         |             |
| 1.4 |                                        | 62 - 63           | PMD 10                     |                |                         |             |
| 1.4 |                                        | 60 - 63           | CPR                        |                |                         |             |
| 1.4 |                                        | 58 - 60           | CP8E                       |                |                         |             |
| 1.4 |                                        | 60 - 62           | CP8E                       |                |                         |             |
| 1.4 |                                        | 62 - 63           | Z-T15 PM Speed             |                |                         |             |
| 1.4 |                                        | 60 - 63           | 1.3394                     | PMHS 6-5-3     |                         | ASP2023     |
| 1.4 |                                        | 60 - 63           | 1.3294                     | PMHS 6-5-3-8   |                         | ASP2030     |
| 1.4 |                                        | 60 - 61           | ASP2011                    |                |                         |             |
| 1.4 |                                        | 60 - 63           | 1.3253                     | PMHS 11-2-5-8  |                         | ASP2052     |
| 1.4 |                                        | 62 - 63           | 1.3202                     | HS 12-0-5-5    |                         | ASP2015     |
| 1.4 |                                        | 60 - 62           | ASP APZ10                  |                |                         |             |
| 1.5 |                                        | 63 - 66           | 1.3394                     | PMHS 6-5-3     |                         | ASP2023     |
| 1.5 |                                        | < 66              | HSSE                       | -              | -                       | -           |
| 1.5 |                                        | < 66              | 1.2436                     | X210CrW12      | -                       | -           |
| 1.5 |                                        | 66                | 1.3343                     | HS 6-5-2 C     | Z85WDCV06-05-04-02      |             |
| 1.5 |                                        | 63 - 66           | 1.3343 Plus                |                |                         | HS 6-5-2C   |
| 1.5 |                                        | 64 - 66           | 1.3344 PM                  | PM 6-5-3       | X130WMoCrV 6-5-4-3      |             |
| 1.5 |                                        | 66                | M W10 PM                   |                |                         | HS 10-2-5-8 |
| 1.5 |                                        | 63 - 64           | PMD M4                     |                |                         |             |
| 1.5 |                                        | 66                | PMD V10                    |                |                         |             |
| 1.5 |                                        | 63 - 64           | PMD 23                     |                |                         |             |
| 1.5 |                                        | 63 - 66           | PMD 30                     |                |                         |             |
| 1.5 |                                        | 63 - 66           | PMD 52                     |                |                         |             |
| 1.5 |                                        | 64 - 66           | PMD 60                     |                |                         |             |
| 1.5 |                                        | 66                | PMD 550                    |                |                         |             |
| 1.5 |                                        | 63 - 64           | PMD 10                     |                |                         |             |
| 1.5 |                                        | 65                | CPOH Plus                  |                |                         |             |
| 1.5 |                                        | 63 - 64           | 1.2379 Plus                |                |                         |             |
| 1.5 |                                        | 65                | CP72 Plus                  |                |                         |             |
| 1.5 |                                        | 63 - 64           | CPR                        |                |                         |             |
| 1.5 |                                        | 63 - 65           | CP2M                       |                |                         |             |
| 1.5 |                                        | 63 - 65           | CPM Rex M4                 |                |                         |             |
| 1.5 |                                        | 63 - 66           | CPM Rex 121                |                |                         |             |
| 1.5 |                                        | 66                | CPM Rex 76                 |                |                         |             |
| 1.5 |                                        | 63 - 65           | Z-M4 PM Speed              |                |                         |             |
| 1.5 |                                        | 63 - 66           | Z-M48 PM Speed             |                |                         |             |
| 1.5 |                                        | 63 - 66           | Z-T15 PM Speed             |                |                         |             |
| 1.5 |                                        | 63 - 64           | Z-Wear PM cold             |                |                         |             |
| 1.5 |                                        | 63 - 66           | 1.3294                     | PMHS 6-5-3-8   |                         | ASP2030     |
| 1.5 |                                        | 64                | Vanadis 8 Super Clean      |                |                         |             |
| 1.5 |                                        | 63 - 66           | Vanadis 4 Extra SuperClean |                |                         |             |
| 1.5 |                                        | 63 - 66           | 1.3253                     | PMHS 11-2-5-8  |                         | ASP2052     |
| 1.5 |                                        | 63 - 65           | 1.3352                     | PMHS 4-3-8     |                         | ASP2053     |
| 1.5 |                                        | 63 - 66           | 1.3202                     | HS 12-0-5-5    |                         | ASP2015     |
| 1.5 |                                        | 63 - 66           | 1.3252                     | ASP2052        |                         |             |
| 1.5 |                                        | 64 - 66           | 1.3243                     | HS6-5-2-5      | Z85WDKCV06-05-05-04-02  |             |
| 1.5 |                                        | 65 - 66           | 1.3207                     | HS10-4-3-10    | Z130WKCDV10-10-04-04-03 |             |
| 1.5 |                                        | 65 - 66           | 1.3208                     | HS9-4-3-11     | Z140KWCDV10-09-04-04-03 |             |
| 1.5 |                                        | 63 - 65           | 1.3211                     | S 12-1-2-3     |                         |             |
| 1.5 |                                        | 63 - 64           | 1.2990                     | X100CrMoV8-1-1 |                         |             |
| 1.5 |                                        | 66                | 1.3247                     | HS 2-10-1-8    | Z110DKCWW               |             |

**EMUGE**  
**FRANKEN**

| Ziel                                                                                                                                                                                                                                                                                                                                                                                                          | Goal                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Zeiteinsparung bei der Innengewindefertigung</b><br>Um Maschinenkapazität einzusparen, sollen Haupt- und Nebenzeiten bei der Innengewindefertigung in Guss-Aluminium-Bauteilen reduziert werden.                                                                                                                                                                                                           | <b>Time saving in internal thread production</b><br>In order to save machine capacity, main and non-productive times in internal thread production in cast aluminium components are to be reduced.                                                                                                                                                                      |
| Idee                                                                                                                                                                                                                                                                                                                                                                                                          | Idea                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Einsparung von Arbeitsschritten</b><br>Bei der konventionellen Innengewindefertigung wird in 2 Schritten gearbeitet. Schritt 1 ist das Vorbohren. Schritt 2 das Einbringen der Gewinde wahlweise mit Gewindebohrern, Gewindeformern oder Gewindefräsern. Durch den notwendigen Werkzeugwechsel entstehen hohe Prozesszeiten. Zur Verkürzung dieser Prozesszeiten können Arbeitsschritte eingespart werden. | <b>Saving of working steps</b><br>In conventional internal thread production, the machining is carried out in 2 steps. Step 1 is pre-drilling. Step 2 is machining the threads using either taps, cold-forming taps or thread milling cutters. The necessary tool change results in long process times. To shorten these process times some working steps can be saved. |
| Lösung                                                                                                                                                                                                                                                                                                                                                                                                        | Solution                                                                                                                                                                                                                                                                                                                                                                |
| <b>Innovative Fertigungstechnologie</b><br>Das innovative Verfahren EMUGE Taptor® kombiniert das Vorbohren und die Gewindefertigung in einem Arbeitsschritt. Dadurch entfällt der sonst notwendige Werkzeugwechsel.                                                                                                                                                                                           | <b>Innovative manufacturing technology</b><br>The innovative EMUGE Taptor® process combines pre-drilling and thread production in one single working step. This eliminates the need to change tools.                                                                                                                                                                    |



**Nullposition**  
Zero position



**Bohrgewinden**  
Drill-threading



**Übergang Freistich**  
Transition undercut



**Umkehrpunkt**  
Reverse point



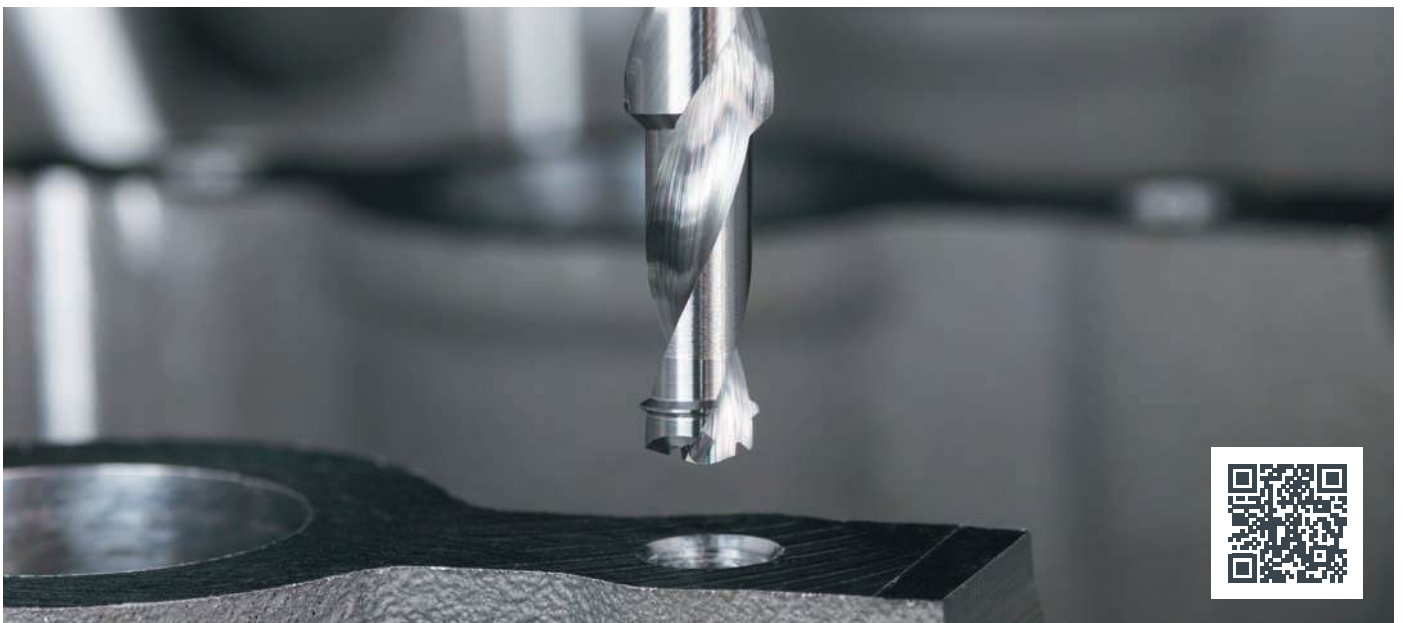
**Übergang Gewinde**  
Transition thread



**Ausfahren Gewinde**  
Exiting thread



**Nullposition**  
Zero position





**Ergebnis**
**EMUGE Taptor® – Zeitvorteil**

Der Zeitvorteil ergibt sich aus mehreren Faktoren:

1. Entfall des Vorbohrens inklusive Verfahrenswege und Werkzeugwechsel
2. Reduzierung der Hauptzeit durch Verwendung des Speedsynchro Taptor®.

In einer Beispielanwendung (Bearbeitung einer Zylinderkopfhauseise in der Abmessung M6, 12 mm tief) ergibt sich eine Zeiteinsparung je Gewinde von etwa 2 Sekunden.

**Result**
**EMUGE Taptor® – Time Advantage**

The time advantage results from several factors:

1. Elimination of pre-drilling including traverse paths and tool change
2. Reduction of the main time by using the Speedsynchro Taptor®.

In a sample application (machining of a cylinder head cover side in the dimension M6, 12 mm deep), the time saving is about 2 seconds per thread.



Das erzeugte Gewinde entspricht den Vorgaben der DIN ISO 965 (Metrische ISO-Gewinde). Im Gewindegrund entsteht ein Freistich, dessen Länge dem des Anschnittes konventioneller Gewindewerkzeuge entspricht. Die Schraube kann in diesen Freistich eingedreht werden.

The thread produced corresponds to the specifications of DIN ISO 965 (Metric ISO thread). An undercut is created at the bottom of the thread, the length of which corresponds to the lead-in chamfer of a conventional threading tool. The screw can be screwed into this undercut.

**Verfahreigenschaften**

Das Verfahren verwendet eine patentrechtlich geschützte Technologie der Audi AG.

**Gewindefestigkeit:**

Erste Untersuchungen zeigen eine mindestens gleichwertige Festigkeit zu konventionellen Gewinden.

**Gewindeprüfung:**

Die Prüfung erfolgt mit handelsüblichen GewindeGrenzlehrdornen nach DIN ISO 1502.

**Lochformen:**

Geeignet sowohl für die Grundloch- als auch für die Durchgangslochbearbeitung.

**Werkzeugaufnahme:**

Der Taptor® wird im Speedsynchro Taptor® aufgenommen.

**Maschinenvoraussetzungen:**

Die Maschine muss für die synchrone Gewindebearbeitung geeignet sein.

**Process Properties**

The process uses a patent-protected technology of Audi AG.

**Thread strength:**

First tests show a strength at least equivalent to that of conventional threads.

**Thread testing:**

The test is carried out with standard thread plug gauges according to DIN ISO 1502.

**Hole shapes:**

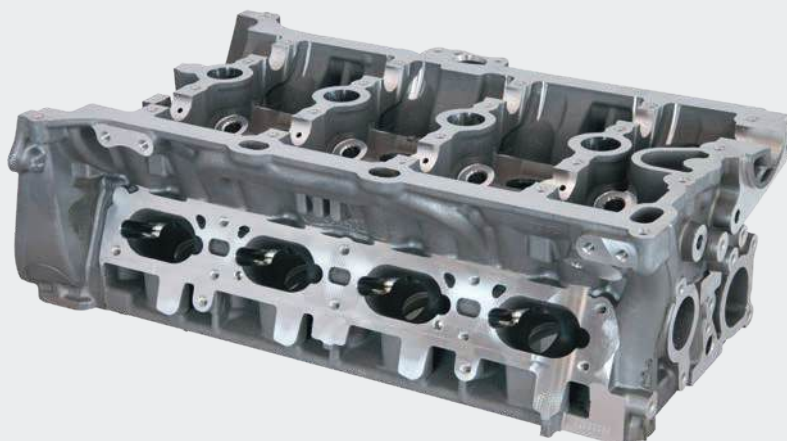
Suitable for both blind and through hole machining.

**Tool holder:**

Der Taptor® is mounted in the Speedsynchro Taptor®.

**Machine requirements:**

The machine must be suitable for synchronous thread machining.



| Aufgabe                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Task                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Zeiteinsparung bei gleichzeitig geringen Kräften</b><br>Durch die Erhöhung des Vorschubs bei gleicher Drehzahl werden die Hauptzeiten erheblich gesenkt. Dadurch entstehen aber höhere Bearbeitungskräfte, welche zu Problemen hinsichtlich der Lebensdauer des Werkzeugs, der Spannung der Bauteile sowie der Werkzeugspannung führen. Zudem können Toleranzen am Bauteil ggf. nicht eingehalten werden.                                               | <b>Time saving while drilling with low cutting forces, is it possible?</b><br>Main machining times can considerably be reduced by increasing the feed rate while keeping a constant rotational speed. This increase will lead to much higher machining forces. Forces that will have a negative effect on the tool life of the drill, the clamping of the component and the clamping of the drill. In addition, tolerances on the component may not be kept anymore.      |
| Idee                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Idea                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Reduktion der Bearbeitungskräfte und verbesserter Spanbruch</b><br>Um gängige Bohrtiefen zu erreichen ist es notwendig, trotz des erhöhten Vorschubs einen kurzen Span zu erzeugen. Gleichzeitig muss die Bohrspitze große Freiwinkel besitzen, um die Kräfte unter Kontrolle zu bringen. Speziell behandelte Oberflächen helfen, die Prozesssicherheit zu erhöhen.                                                                                     | <b>Reducing machining forces and optimising chip-breaking!</b><br>To achieve common drilling depths with an increased feed, it becomes absolutely necessary to produce short chips only. At the same time, in order to control the cutting forces, the drill tip must have a large relief angle. And for increasing the process reliability, a specially treated surface must be considered.                                                                              |
| Lösung                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Spanteiler und Oberflächenbehandlung</b><br>Der Spanteiler hilft den Span kurz zu halten und die Bearbeitungskräfte zu kontrollieren. Neu entwickelte Oberflächenbehandlungen und eine speziell für diese Anwendungen ausgelegte Hartstoffschicht ermöglichen eine sichere Spanabfuhr.                                                                                                                                                                  | <b>A chip breaker and a special surface treatment will bring the solution!</b><br>The chip breaker helps to keep the chip short and to control the machining forces. Newly EMUGE developed surface treatments and an especially designed hard coating enable a reliable chip evacuation for these applications.                                                                                                                                                           |
| Ergebnis                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Result                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Zeitvorteil von 50% und mehr bei der Zerspanung</b><br>Die Hauptzeiten werden erheblich reduziert, was zu Reduktion von Taktzeiten und Einsparung von Maschinenkapazitäten führt. Die Produktivität wird erhöht und Ressourcen geschont.                                                                                                                                                                                                                | <b>Time advantage of 50% and more in the machining process</b><br>The main machining times are considerably reduced, resulting in reduced cycle times and savings in machine capacity. Productivity is increased and resources are saved.                                                                                                                                                                                                                                 |
| <b>Axialkraft wird um ca. 50% reduziert</b><br>Im Vergleich zu Serienwerkzeugen kann mit einem verdoppelten Vorschub gebohrt werden, wobei die Axialkraft nicht ansteigt. Wenn der PunchDrill mit dem Vorschub des Serienwerkzeugs eingesetzt wird, halbiert sich die Axialkraft. Das ist sehr nachhaltig, da die Leistungsaufnahme der Maschine sinkt. Zudem können labile Teile sowie Werkstücke in labilen Spannungen prozesssicherer gefertigt werden. | <b>Axial force reduced by approx. 50%</b><br>Drilling can be carried out at twice the feed rate compared to standard tools without increasing the axial force. The axial force is cut in half when the PunchDrill is used with the feed of the series tool. Very sustainable, as power consumption of the machine tool is reduced as well. In addition, unstable parts as well as workpieces with unstable clamping can be manufactured with greater process reliability. |



## Verfahrenseigenschaften

- Bearbeitung von Aluminium-Gusslegierungen mit mindestens 7% Si-Anteil und Magnesium-Legierungen
- Bohrtiefe bis ca. 8 x D
- Nenndurchmesser-Bereich von 3,3 mm bis 12 mm
- Standzeit vergleichbar mit konventionellen Bohrwerkzeugen
- Stufenwerkzeuge möglich
- Gute Zentrierfähigkeit führt zu hoher Positionsgenauigkeit der Bohrungen
- Bearbeitung mit normalen Bohrzyklus auf CNC-Maschinen
- Zum Patent angemeldete Bohrergeometrie
- Minimalmengenschmierung möglich
- Schnittgeschwindigkeiten und Kühlmitteldrücke sind analog dem konventionellen Bohren anzuwenden
- Die Werkzeuge sind von EMUGE nachschleifbar

## Process characteristics

- Machining of aluminium cast alloys with at least 7% Si content and magnesium alloys
- Drilling depth up to approx. 8 x D
- Nominal diameter range from 3.3 mm to 12 mm
- Tool life comparable with conventional drilling tools
- Step tools possible
- Excellent centring capability leads to high positioning accuracy of the drill holes
- Machining with normal drilling cycle on CNC machines
- Patent-pending drill geometry
- Minimum quantity lubrication possible
- Cutting speeds and coolant pressures are to be applied analogous to conventional drilling
- The tools can be resharpened by EMUGE

## Schnittdaten

## Cutting data

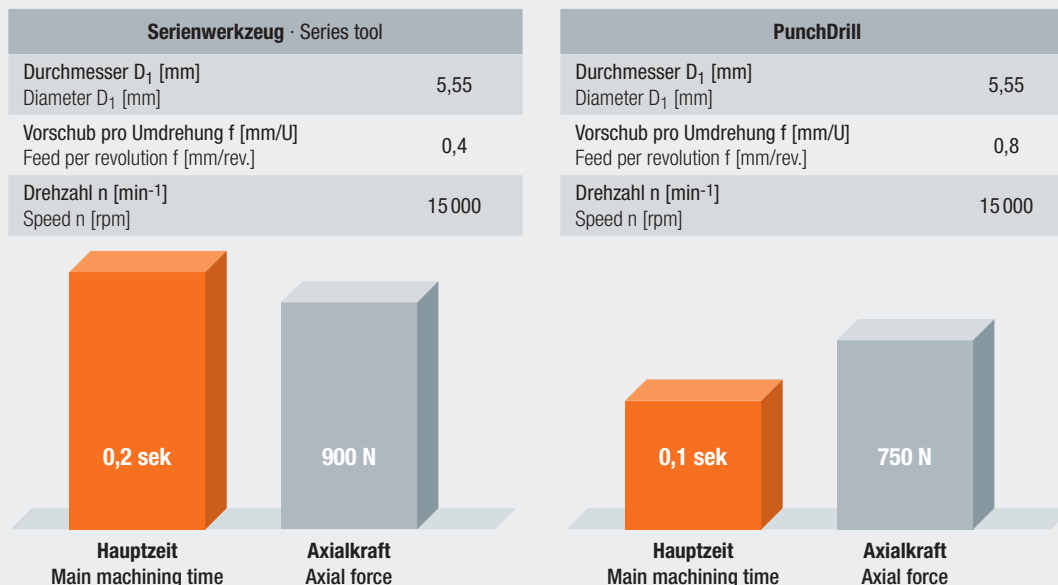
| Durchmesser D <sub>1</sub> [mm]<br>Diameter D <sub>1</sub> [mm]                       | 3,3                                                                           | 4    | 4,2  | 4,6  | 5    | 5,6  | 6    | 6,8  | 7    | 7,4  | 8    | 8,5  | 9,3  | 11,2 | 12   |
|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vorschub pro Umdrehung f [mm/U]<br>Feed per revolution f [mm/rev.]                    | 0,45                                                                          | 0,50 | 0,55 | 0,60 | 0,70 | 0,80 | 0,85 | 0,90 | 0,95 | 1,00 | 1,10 | 1,20 | 1,25 | 1,3  | 1,35 |
| Schnittgeschwindigkeit v <sub>c</sub> [m/min]<br>Cutting speed v <sub>c</sub> [m/min] | 200 - 300 in den Materialgruppen<br>in the material groups N 1.5-1.6, 3.1-3.2 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

Die Werte verstehen sich als Empfehlung und können ggf. je nach Einsatzfall noch erhöht werden.

The values are to be understood as recommendations and can be increased if necessary depending on the application.

## Anwendungsbeispiel in Aluminium-Gusslegierungen

## Application example in aluminium cast alloys



## Verfügbarkeit

- Da es sich bei der Bearbeitung von GAL- und Magnesiumbauteilen zumeist um anwendungsspezifische Sonderwerkzeuge handelt, gibt es kein lagerhaltiges Standardprogramm
- Lieferzeit der Sonderwerkzeuge beträgt max. 7 Wochen
- Es ist möglich, Grundsatzversuche mit bauteilunabhängigen Musterwerkzeugen durchzuführen, welche kurzfristig von unseren Außendienstmitarbeitern zur Verfügung gestellt werden können
- **Geplante Produkterweiterung:**  
3-nutige Ausführung für vorgegossene Löcher

## Availability

- There is no standard programme available from stock as the machining of cast aluminium and magnesium components mostly involves application-specific special tools.
- Delivery time of the special tools is max. 7 weeks
- It is possible to carry out basic tests with component-independent sample tools, which can be made available at short notice by our sales representatives
- **Planned product expansion:**  
3-fluted version for pre-cast holes

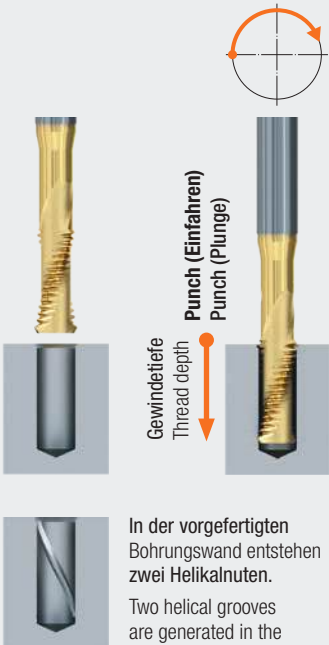


Die EMUGE PunchTap-Technologie stellt neben Gewindebohren, Gewindeformen und Gewindefräsen eine weitere Technologie zur Gewindeherstellung dar. Mit ihrem innovativen, sehr kurzen Bewegungsablauf eröffnet sie eine völlig neue Dimension der Produktivität.

Die Grundidee der Kinematik gliedert sich in drei Arbeitsschritte. Voraussetzung ist eine Vorbohrung im Werkstück mit dem entsprechenden Vorbohrdurchmesser.

The EMUGE PunchTap technology constitutes besides tapping, cold-forming of threads and thread milling another technology for thread production. Thanks to its innovative, very short motion process, it establishes an entirely new dimension of productivity.

The basic idea of the kinematics is divided into three working steps. A drilled pilot hole in the workpiece with the suitable preparatory diameter is required.

| Schritt 1 · Step 1                                                                                                                                                                                                                                                                                                                                                      | Schritt 2 · Step 2                                                                                                                                                                                                                                                                         | Schritt 3 · Step 3                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p><b>Punch (Einfahren)<br/>Punch (Plunge)</b></p> <p>Gewindetiefe<br/>Thread depth</p> <p>In der vorgefertigten Bohrungswand entstehen zwei Helikalnuten.<br/>Two helical grooves are generated in the pre-machined wall of the hole.</p>                                           |  <p><b>1/2 P Gewindeformen<br/>Thread-forming</b></p>                                                                                                                                                     |  <p><b>Herausfahren<br/>Retraction</b></p>                                                                                                        |
| <p><b>Schritt 1: Punch (Einfahren)</b></p> <p>Der PunchTap besitzt kein durchgehendes Gewindeprofil am Umfang, sondern nur zwei Zahnreihen, die um 180° versetzt angeordnet sind. Dabei übernimmt der erste Zahn jeder Zahnreihe die Nuterzeugung und ermöglicht somit den ersten Schritt des Verfahrens, das <b>helikale Einfahren in die Vorbohrung</b>.</p>          | <p><b>Schritt 2: Gewindeformen</b></p> <p>Ist der PunchTap auf Gewindetiefe angekommen, erfolgt das <b>Gewindeformen</b>, welches durch das synchrone Verfahren der Vorschubachse um die halbe Gewindesteigung bei gleichzeitiger Rotation des Werkzeuges um etwa 180° stattfindet.</p>    | <p><b>Schritt 3: Herausfahren</b></p> <p>Nach der Ausführung des Gewindeformvorgangs wird der PunchTap durch die erzeugten Nuten <b>aus der Bohrung herausgefahren</b>.</p> <p>Entstanden ist ein Gewinde mit zwei Helikalnuten.</p> |
| <p><b>Step 1: Punch (Plunge)</b></p> <p>The PunchTap does not have a continuous thread profile on the circumference but two rows of teeth which are offset by 180°.</p> <p>The first tooth of each row of teeth is responsible for producing the groove and thereby enables the first step of the process, the <b>helical plunge into the pre-drilled tap hole</b>.</p> | <p><b>Step 2: Thread-forming</b></p> <p>Once the PunchTap has reached the depth of the thread, the <b>forming of the thread</b> starts which is executed by a synchronous movement of the feed axis by half of the pitch while simultaneously rotating the tool by approximately 180°.</p> | <p><b>Step 3: Retraction</b></p> <p>Once the thread-forming process is finished, the PunchTap is <b>retracted from the hole</b> through the generated grooves.</p> <p>The result is a thread with two helical grooves.</p>           |

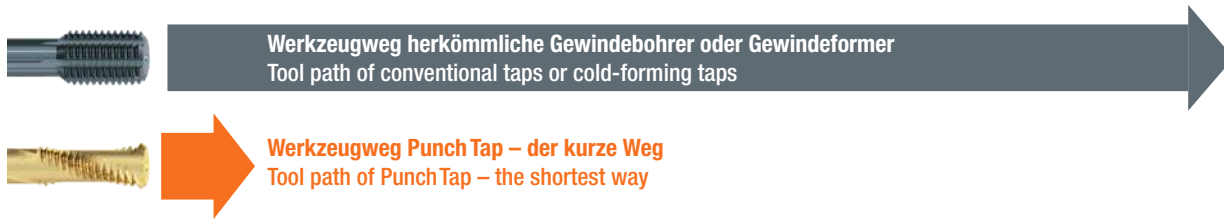


### EMUGE Punch Tap – der kurze Weg

Vergleicht man den Werkzeugweg des EMUGE PunchTap mit dem Werkzeugweg herkömmlicher Gewindebohrer oder Gewindeformer, so fällt dieser bei einem Gewinde M6 mit 15 mm nutzbarer Gewindetiefe ca. 15 mal kürzer aus. Ergebnis ist eine deutliche Zeiteinsparung im Gewindezyklus von bis zu 75%.

### EMUGE PunchTap – the shortest way

When comparing the tool path of the EMUGE PunchTap with the tool path of conventional taps or cold-forming taps, it shows that the path is approximately 15 times shorter for a thread M6 with a depth of thread of 15 mm. The result is a significant time savings up to 75% in a threading cycle.

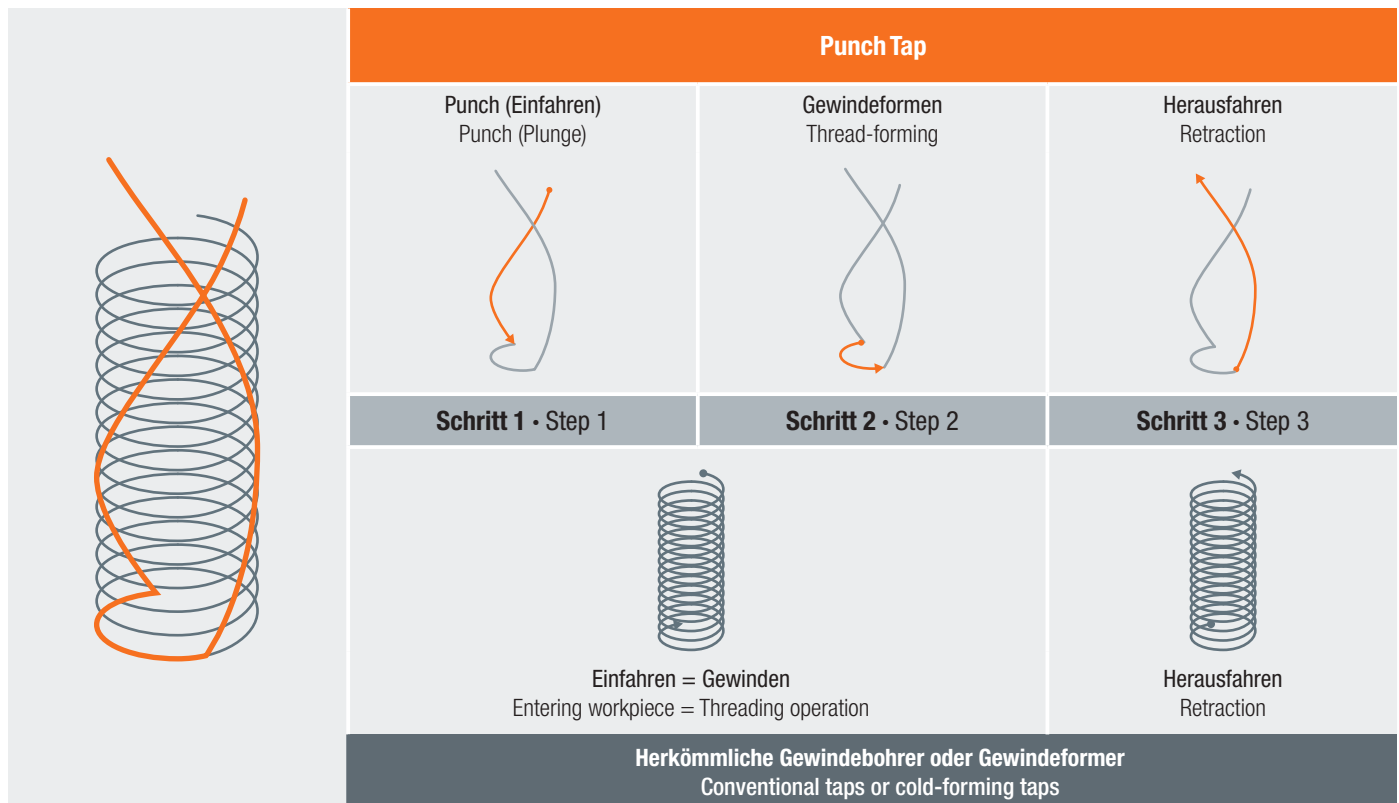


Untersuchungen am ISF der Universität Dortmund ergaben, dass das Punch Tap-Gewinde mit einem herkömmlich produzierten Gewinde in Eigenschaften und Ausreißfestigkeit vergleichbar ist.

Studies at the ISF at the University of Dortmund show that the thread produced by the Punch Tap is comparable with a conventionally produced thread in terms of properties and pull-out resistance.

### Werkzeugwegvergleich

### Comparison of tool paths



Die Möglichkeit eines Einsatzes der Punch Tap-Technologie hängt von den Prozessbedingungen ab und wird individuell ermittelt. Bei Interesse kontaktieren Sie uns bitte.

Weitere Informationen finden Sie unter [www.punchtap.com](http://www.punchtap.com)

The possibility of using the PunchTap technology depends on the process conditions and is determined in each individual case. If interested, please contact us.

For more information, see [www.punchtap.com](http://www.punchtap.com)





Nutzen Sie unseren **Spanntechnik-Katalog 165** und erweitern Sie Ihre Möglichkeiten, sich über unsere Kompetenzen im Bereich Sonderspannmittel zu informieren.

Fordern Sie diesen unter der Artikelnummer **ZK10007.DEGB** an.

Benefit from our **Clamping Technology Catalogue 165** and enhance your possibilities to inform yourself about our competence in the field of special clamping devices.

Just request it under article number **ZK10007.DEGB**.



Weitere Informationen zu unseren vielfältigen Spannsystemen erhalten Sie im Web

Further information about our diverse clamping systems is also available on the web



Katalog · Catalogue

# 165

■ ■ ■ Made in Germany



Spanntechnik  
Clamping Technology



## Spannsystem SG

Besser bekannt unter dem Begriff „Sägengewinde-Spannsystem“. Dieses wurde von EMUGE-FRANKEN erfunden und patentiert.



### Funktionsbeschreibung

Eine mehrfach geschlitzte **Spannbüchse** mit einem speziellen Sägengewinde wird durch das Einleiten der Axialkraft über die flache Flanke des Gewindes axial verschoben. Dabei entsteht eine radiale Expansion (Innenspannung) oder Einschnürung (Außenspannung). Das Werkstück wird gespannt.

### Vorteile

- Hohe Steifigkeit bei langen Spannflächen oder engen Platzverhältnissen
- Optimierte Störkonturen durch sehr schlanke Bauweise möglich
- Gleichmäßige Kraftverteilung auf der gesamten Spannfläche

### Merkmale

- Innen- und Außenspannung: von Spann- $\varnothing$  5 bis 600 mm
- Rundläufe ab 4  $\mu$ m, z. B. Spann- $\varnothing$  80 mm, ab 6  $\mu$ m wiederholbar
- 0,6 mm Standardhub im Durchmesser bei Spann- $\varnothing$  100 mm
- Spannung mit und ohne Axialkomponente möglich
- Sehr lange Spannflächen möglich
- Verschmutzungsunempfindlich durch Labyrinth-Effekt des Gewindes

## Clamping System SG

This clamping system, also known as “butress thread clamping”, was invented and patented by EMUGE-FRANKEN.



### Functional description

A multi-slotted **clamping bush** with a special buttress thread is axially displaced by the introduction of axial force via the flat flank of the thread. This creates a radial expansion (internal clamping) or constriction (external clamping). The workpiece is clamped.

### Advantages

- High rigidity with long clamping surfaces or restricted space conditions
- Optimised interference contours possible due to very slim design
- Uniform force distribution over the entire clamping surface

### Features

- Internal and external clamping: from clamping dia. 5 to 600 mm
- Run-out from 4  $\mu$ m, e.g. clamping dia. 80 mm, from 6  $\mu$ m repeatable
- 0.6 mm standard stroke in diameter with clamping dia. 100 mm
- Clamping with and without axial component possible
- Very long clamping surfaces possible
- Highly resistant to soiling due to labyrinth effect of the thread



## Spannsystem SL

Unsere Spannsysteme werden stetig optimiert. Hinter dem patentierten Spannsystem „SL“ steckt eine Weiterentwicklung der Spannsysteme SG und SP.



## Funktionsbeschreibung

Eine durch **additive Fertigung** hergestellte Spannbüchse, ausgestattet mit einer Vielzahl von längsgerichteten und **mäanderförmigen Spannsegmenten**, überbrückt eine radiale Expansion (Innenspannung) oder radiale Einschnürung (Außenspannung) von mehreren Millimetern. Die Spannsegmente sind dabei metallisch verbunden und benötigen keine Gummielemente zur Verformung. Die Betätigung erfolgt beispielsweise über ein Sägewinde.

## Vorteile

- Gleichmäßige Kraftverteilung auf der gesamten Spannlänge
- Verformungsarme Spannung von dünnwandigen Bauteilen
- Ausgleich von leichten Rundheitsfehlern

## Merkmale

- Innen- und Außenspannung: von Spann- $\varnothing$  15 bis 230 mm
- Rundläufe ab 4  $\mu\text{m}$ , z. B. Spann- $\varnothing$  100 mm, ab 6  $\mu\text{m}$  wiederholbar
- 2,5 mm Standardhub im Durchmesser bei Spann- $\varnothing$  100 mm
- Die patentierte Geometrie verhindert das Verschränken der einzelnen Spannsegmente

## Clamping System SL

Our clamping systems are constantly being optimised. The patented “SL” clamping system represents an advanced development of the SG and SP clamping systems.

## Functional description

A clamping sleeve produced by **additive manufacturing** equipped with a large number of longitudinally oriented **meander-shaped clamping segments**, bridges a radial expansion (internal clamping) or radial contraction (external clamping) of several millimetres. The clamping segments are metallically connected and do not require rubber elements for forming. For example, the actuation takes place via a buttress thread.

## Advantages

- Uniform force distribution over the entire clamping length
- Low-deformation clamping of thin-walled components
- Compensation of slight roundness errors

## Features

- Internal and external clamping: from clamping dia. 15 to 230 mm
- Runouts from 4  $\mu\text{m}$ , e.g. clamping dia. 100 mm, from 6  $\mu\text{m}$  repeatable
- 2.5 mm standard stroke in diameter with clamping dia. 100 mm
- The patented geometry prevents the interlocking of the individual clamping segments

## Spannsystem SZ



## Funktionsbeschreibung

Eine mehrfach geschlitzte **Spannzange** wird durch das Einleiten der Axialkraft über einen Kegel axial verschoben. Durch den Kegelwinkel entsteht eine radiale Expansion (Innenspannung) oder Einschnürung (Außenspannung). Das Werkstück wird gespannt.

## Vorteile

- Geeignet bei kurzer Spannbasis am Werkstück
- Spannungsmöglichkeit auch bei ausgefallenen Werkstückformen
- Fixierung von Durchmessern mit großen Toleranzen

## Merkmale

- Innen- und Außenspannung, von Spann- $\varnothing$  5 bis 600 mm
- Rundläufe ab 4  $\mu\text{m}$ , z. B. Spann- $\varnothing$  85 mm, ab 8  $\mu\text{m}$  wiederholbar
- 0,6 mm Standardhub im Durchmesser bei Spann- $\varnothing$  100 mm
- Spannung mit und ohne Axialkomponente möglich
- Doppelkegelausführung möglich

## Clamping System SZ

## Functional description

A multiple-slotted **collet** is axially displaced by the introduction of the axial force via a taper. The taper angle causes radial expansion (internal clamping) or contraction (external clamping). The workpiece is clamped.

## Advantages

- Suitable with short clamping base on the workpiece
- Clamping possibility even for unusual workpiece shapes
- Clamping of diameters with large tolerances

## Features

- Internal and external clamping, from clamping dia. 5 to 600 mm
- Run-out from 4  $\mu\text{m}$ , e.g. clamping dia. 85 mm, from 8  $\mu\text{m}$  repeatable
- 0.6 mm standard stroke in diameter with clamping dia. 100 mm
- Clamping with and without axial component possible
- Twin taper design possible



### Spannsystem ST

Dieses Spannsystem ist die patentierte Weiterentwicklung des Spannsystems SZ.



#### Funktionsbeschreibung

Eine mehrfach geschlitzte, einteilige **Spannzange** wird durch das Einleiten einer Axialkraft über zwei gleichgerichtete Kegel axial verschoben. Durch die Kegelwinkel entsteht eine radiale Expansion (Innenspannung) oder Einschnürung (Außenspannung). Durch die geometrische Auslegung kommt der von der Krafteinleitung weiter entfernte Spanndurchmesser als erstes zur Anlage. Der weitere Axialweg wird dann von einer Dehnzone aufgenommen, bis auch der zweite Spanndurchmesser zur Anlage kommt. Die erste Spannkraft erzeugt somit die Dehnzone, die zweite Spannkraft kommt von der Krafteinleitung.

#### Vorteile

- Ausgleich von geringen Toleranzunterschieden, Ungenauigkeiten und Formfehlern
- Variabel auslegbare Spannkraft an zwei Spannstellen
- Spannung mit Axialkomponente

#### Merkmale

- Innen- und Außenspannung: von Spann- $\varnothing$  15 bis 300 mm
- Rundläufe ab 4  $\mu$ m, z. B. Spann- $\varnothing$  75 mm, ab 7  $\mu$ m wiederholbar
- 0,6 mm Standardhub im Durchmesser bei Spann- $\varnothing$  100 mm

### Clamping System ST

This clamping system is the patented advanced development of the clamping system SZ.



#### Functional description

A multi-slotted, one-piece **collet** is axially displaced by the introduction of an axial force via two cones in the same direction. Due to the taper angles, a radial expansion (internal clamping) or constriction (external clamping) occurs. Due to the special geometric design, the clamping diameter further away from the force application comes into contact first. The further axial travel is then absorbed by an expansion zone until the second clamping diameter also comes into contact. The first clamping force thus generates the expansion zone, the second clamping force originates from the introduction of force.

#### Advantages

- Compensation for minor tolerance differences, inaccuracies and form errors
- Two clamping points are controlled with only one force application
- Clamping with axial component

#### Features

- Internal and external clamping: from clamping dia. 15 to 300 mm
- Run-out from 4  $\mu$ m, e.g. clamping dia. 75 mm, from 7  $\mu$ m repeatable
- 0.6 mm standard stroke in diameter with clamping dia. 100 mm

### Spannsystem SB



#### Funktionsbeschreibung

Im Prinzip erklärt hier der Name „Schrägbolzenfutter“ schon am besten die Funktionsweise. Durch das Einleiten einer Axialkraft werden meist **3 bis 8 schräg angeordnete längliche Bolzen** betätigt. Durch den Anstellwinkel dieser ergibt sich eine radiale Einschnürung der Spannbacken bei einem gleichzeitigen axialen Niederzug.

#### Vorteile

- Großer Spannhub ermöglicht Hinterschneidung
- Verschmutzungsunempfindlich dank guter Späneabfuhr
- Nur geringe Fliehkraftverluste

#### Merkmale

- Außenspannung: von Spann- $\varnothing$  15 bis 600 mm
- Rundläufe ab 20  $\mu$ m, z. B. Spann- $\varnothing$  55 mm, ab 25  $\mu$ m wiederholbar
- 10 mm Standardhub im Durchmesser bei Spann- $\varnothing$  100 mm
- Axialkomponente der Spannbacken

### Clamping System SB



#### Functional description

In principle, the description “bolt clamping chuck” already explains how this system works. The application of an axial force actuates **3 to 8 obliquely arranged oblong bolts**. The angle of attack of these bolts results in a radial constriction of the clamping jaws with a simultaneous axial pull-down.

#### Advantages

- Large clamping stroke enables undercuts
- Resistant to soiling thanks to excellent chip evacuation
- Only minor loss of centrifugal force

#### Features

- External clamping: from clamping dia. 15 to 600 mm
- Run-out from 20  $\mu$ m, e.g. clamping dia. 55 mm, from 25  $\mu$ m repeatable
- 10 mm standard stroke in diameter with clamping dia. 100 mm
- Axial component of the clamping jaws



## Spannsystem SM

## Clamping System SM



## Funktionsbeschreibung

Drei bis zwölf werkstückberührende **Spannbacken** sind auf einer **Membran** montiert. Diese erzeugt die zentrale Betätigungskraft: Wird in axialer Richtung Kraft auf die Membran ausgeübt, biegt sich diese durch. Dabei bewegen sich die Spannbacken axial und öffnen oder schließen je nach Kraftrichtung radial. Das Werkstück wird gespannt oder entspannt. Die Eigenfederkraft der Membran kann zur Vorzentrierung oder zur Erhöhung der Spannkraft genutzt werden.

## Vorteile

- Hohe Halte- bzw. Drehmomente, auch bei dünnwandigen Werkstücken
- Unempfindlich gegenüber Verschmutzung
- Überdurchschnittliche Lebensdauer der Spannmembran

## Merkmale

- Außenspannung: Spann- $\varnothing$  6 bis 650 mm
- Rundläufe ab 2  $\mu\text{m}$ , z. B. Spann- $\varnothing$  380 mm, ab 7  $\mu\text{m}$  wiederholbar
- 0,6 mm Standardhub im Durchmesser bei Spann- $\varnothing$  100 mm
- Spannbacken mit Axialkomponente
- Fliehkraftausgleich der Spannkraft
- Sicherheitsspannung bei Energieausfall möglich

## Functional description

Three to twelve **clamping jaws** in contact with the workpieces are mounted on a **diaphragm** which generates the central actuating force: If force is exerted on the diaphragm in the axial direction, it bends. The clamping jaws move axially and open or close radially depending on the direction of the force. The workpiece is clamped or released. The inherent spring force of the diaphragm can be used for pre-centring or for increasing the clamping force.

## Advantages

- High holding torques respectively torques even with thin-walled components
- Resistant to soiling
- Above-average service life of the clamping diaphragm

## Features

- External clamping: clamping dia. 6 to 650 mm
- Run-out from 2  $\mu\text{m}$ , e.g. clamping dia 380 mm, from 7  $\mu\text{m}$  repeatable
- 0.6 mm standard stroke in diameter with clamping dia. 100 mm
- Clamping jaws with axial component
- Centrifugal force compensation of the clamping force
- Safety clamping possible in case of power failure

## Spannsystem SP

## Clamping System SP



## Funktionsbeschreibung

Durch die axiale Kraftbeaufschlagung bewegen sich die **Spannhülsen** in Kraftrichtung und dehnen sich dabei radial aus. Hierdurch wird einerseits das Spiel zwischen Spannhülsen und Grundkörper, andererseits zwischen Spannhülsen und Werkstück beseitigt. Das Werkstück wird gespannt.

## Vorteile

- Fundiertes Know-how durch Lizenzfertigung seit 1950
- Keine Spannabdrücke durch geschlossene Spanndecke
- Fixierung verschiedener Durchmesser in unterschiedlichen Spannebenen

## Merkmale

- Innenspannung: von Spann- $\varnothing$  12 bis 400 mm
- Außenspannung: von Spann- $\varnothing$  6 bis 400 mm
- Rundläufe ab 2  $\mu\text{m}$ , z. B. Spann- $\varnothing$  34 mm, ab 4  $\mu\text{m}$  wiederholbar
- 0,1 mm Standardhub im Durchmesser bei Spann- $\varnothing$  100 mm
- Axialkomponente der Spannhülsen
- Einfacher Aufbau
- Spannsystem auch für Werkzeugaufnahmen geeignet

## Functional description

Due to the axial application of force, the **clamping sleeves** move in the direction of the force and expand radially. This eliminates the play between the clamping sleeves and the base body on the one hand, and between the clamping sleeves and the workpiece on the other. The workpiece is clamped.

## Advantages

- Thorough know-how due to licensed production since 1950
- No clamping marks thanks to closed clamping cover
- Clamping of various diameters in different clamping levels

## Features

- Internal clamping: from clamping dia. 12 to 400 mm
- External clamping: from clamping dia. 6 to 400 mm
- Run-out from 2  $\mu\text{m}$ , e.g. clamping dia. 34 mm, from 4  $\mu\text{m}$  repeatable
- 0.1 mm standard stroke in diameter with clamping dia. 100 mm
- Axial component of the clamping sleeves
- Simple design
- Clamping system also suitable for tool holders

## Spannsystem SK

## Clamping System SK



### Funktionsbeschreibung

Das Spannelement besteht aus im Grundkörper hochgenau geführten **keilförmigen Backen**. Durch eine axiale Kraftbeaufschlagung werden diese über einen ebenfalls keilförmigen Betätigungsring radial verschoben. Das Werkstück wird gespannt. Die Anzahl der Spannbacken kann hier je nach Anwendung durchaus von 2 bis 20 Stück variieren.

### Vorteile

- Großer Spannhub ermöglicht Hinterschneidung
- Konturanpassung durch variable Spannbackenanzahl

### Merkmale

- Innenspannung: von Spann- $\varnothing$  20 bis 100 mm
- Außenspannung: von Spann- $\varnothing$  15 bis 100 mm
- Rundläufe ab 12  $\mu$ m, z. B. Spann- $\varnothing$  28 mm, ab 12  $\mu$ m wiederholbar
- 5 mm Standardhub im Durchmesser bei Spann- $\varnothing$  100 mm
- Keine Axialkomponente der Spannbacken

### Functional description

The clamping element consists of **wedge-shaped jaws** guided with high precision in the base body. By applying an axial force, these jaws are radially displaced via a likewise wedge-shaped actuating ring. The workpiece is clamped. The number of clamping jaws can vary from 2 to 20 depending on the application.

### Advantages

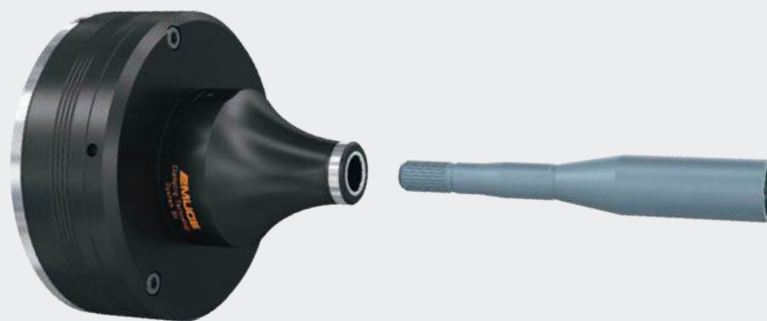
- Large clamping stroke enables undercuts
- Adaptation to contour due to variable number of clamping jaws

### Features

- Internal clamping: from clamping dia. 20 to 100 mm
- External clamping: from clamping dia. 15 to 100 mm
- Run-out from 12  $\mu$ m, e.g. clamping dia. 28 mm, from 12  $\mu$ m repeatable
- 5 mm standard stroke in diameter with clamping dia. 100 mm
- No axial component of the clamping jaws

## Spannsystem SH

## Clamping System SH



### Funktionsbeschreibung

Meist handelt es sich hierbei um ein **geschlossenes Hydrauliksystem**, das im Vakuum mit Öl befüllt wird. Durch die Betätigung eines Kolbens wird das Kammer-system mit hohem Druck beaufschlagt. Dieser weitet die dünnwandige Dehnbuchse radial auf und spannt somit das Werkstück im vorgegebenen Spannbereich.

### Vorteile

- Wenige mechanische Verschleißteile
- Kostengünstige Spannelemente bei höchster Genauigkeit
- Hohe und oberflächenschonende Spannkraft

### Merkmale

- Innenspannung: von Spann- $\varnothing$  6 bis 250 mm
- Außenspannung: von Spann- $\varnothing$  5 bis 200 mm
- Rundläufe ab 2  $\mu$ m, z. B. Spann- $\varnothing$  20 mm, ab 3  $\mu$ m wiederholbar
- 0,050 mm Standardhub im Durchmesser bei Spann- $\varnothing$  100 mm
- Verschmutzungsunempfindlich
- Einfacher Aufbau
- Extrem dünnwandige Spannlösungen realisierbar

### Functional description

This is usually a **closed hydraulic system** that is filled with oil in a vacuum. By actuating a piston, high pressure is applied to the chamber system. This expands the thin-walled expansion bush radially and thus clamps the workpiece in the specified clamping range.

### Advantages

- Few mechanical wear parts
- Cost-effective clamping elements with highest accuracy
- High and surface-friendly clamping forces

### Features

- Internal clamping: from clamping dia. 6 to 250 mm
- External clamping: from clamping dia. 5 to 200 mm
- Run-out from 2  $\mu$ m, e.g. clamping dia 20 mm, from 3  $\mu$ m repeatable
- 0.050 mm standard stroke in diameter with clamping dia. 100 mm
- Highly resistant to soiling
- Simple design
- Extremely thin-walled clamping solutions can be realised



## A

|          |                     |         |
|----------|---------------------|---------|
| A0101001 | G (BSP)             | 238     |
| A0101001 | M                   | 150     |
| A0101001 | MF                  | 194-195 |
| A0101001 | UNF                 | 224     |
| A0101051 | M-LH                | 150     |
| A0101051 | MF-LH               | 194-195 |
| A0102501 | M                   | 151     |
| A0102501 | W zyl               | 264     |
| A0102521 | M „6GX“             | 151     |
| A0181000 | NPT                 | 253     |
| A0181000 | NPTF                | 258     |
| A0181000 | Rc (BSPT)           | 262     |
| A0181000 | W keg               | 263     |
| A0191000 | NPT                 | 253     |
| A0203000 | M                   | 151     |
| A0208900 | M                   | 150     |
| A0451000 | M                   | 150     |
| A0513500 | M                   | 151     |
| A6622501 | G (BSP)             | 242     |
| A6622501 | MF                  | 202     |
| A6622501 | Rp (BSPP)           | 245     |
| A6622521 | MF „6GX“            | 202     |
| A6622531 | G (BSP) „X“ +0,05   | 242     |
| A6622531 | Rp (BSPP) „X“ +0,05 | 245     |
| A662254A | G (BSP) „X“ +0,1    | 242     |
| A662254A | MF „6HX“ +0,1       | 202     |

## B

|          |         |     |
|----------|---------|-----|
| B0100501 | M       | 104 |
| B0100501 | MF      | 163 |
| B0100501 | UNC     | 205 |
| B0100501 | UNF     | 217 |
| B0101001 | BSF     | 270 |
| B0101001 | M       | 92  |
| B0101001 | MF      | 162 |
| B0101051 | MF-LH   | 162 |
| B0102000 | LK-M    | 290 |
| B0102001 | M       | 98  |
| B0102501 | M       | 103 |
| B0109101 | M       | 105 |
| B0109201 | M       | 98  |
| B0109401 | M       | 107 |
| B010J601 | M       | 101 |
| B010J901 | G (BSP) | 230 |
| B010J901 | M       | 105 |
| B010J901 | MF      | 164 |
| B010K101 | G (BSP) | 231 |
| B010K101 | M       | 106 |
| B010K101 | MF      | 165 |
| B010R501 | M       | 99  |
| B010T001 | M       | 102 |
| B0119401 | M       | 107 |
| B011R501 | M       | 99  |

|          |              |     |
|----------|--------------|-----|
| B016K101 | G (BSP)      | 231 |
| B016K101 | M            | 106 |
| B016K101 | MF           | 165 |
| B0181000 | NPT          | 249 |
| B0181000 | NPTF         | 255 |
| B0183000 | NPT          | 249 |
| B0183000 | NPTF         | 255 |
| B0183000 | Rc (BSPT)    | 260 |
| B0193000 | NPT          | 249 |
| B0203000 | M            | 95  |
| B0203000 | UNC          | 205 |
| B0203000 | UNF          | 217 |
| B0203010 | M „4H“       | 95  |
| B0203020 | M „6G“       | 96  |
| B0203030 | M „7G“       | 97  |
| B0203050 | M-LH         | 97  |
| B0203100 | M            | 95  |
| B0203100 | MF           | 163 |
| B0203100 | UNC          | 205 |
| B0203100 | UNF          | 217 |
| B0203110 | M „4H“       | 96  |
| B0203120 | M „6G“       | 96  |
| B0203130 | M „7G“       | 97  |
| B0203150 | M-LH         | 97  |
| B0203G00 | EG M (STI)   | 280 |
| B0203G00 | M            | 100 |
| B0204500 | EG M (STI)   | 280 |
| B0204500 | M            | 100 |
| B0208400 | M            | 92  |
| B0208400 | MF           | 162 |
| B0208410 | M „4H“       | 93  |
| B0208420 | M „6G“       | 93  |
| B0208430 | M „7G“       | 93  |
| B0208450 | M-LH         | 93  |
| B0208900 | M            | 92  |
| B0208900 | MF           | 162 |
| B0208900 | UNC          | 204 |
| B0208900 | UNF          | 216 |
| B0208910 | M „4H“       | 93  |
| B0208910 | UNC „3B“     | 204 |
| B0208910 | UNF „3B“     | 216 |
| B0208920 | M „6G“       | 93  |
| B0208930 | M „7G“       | 93  |
| B0208950 | M-LH         | 93  |
| B0208F01 | M            | 108 |
| B0208F01 | MF           | 166 |
| B0208F21 | M „6GX“      | 109 |
| B0208J01 | M            | 94  |
| B0208J01 | MF           | 163 |
| B0209J01 | M            | 94  |
| B0209J01 | MF           | 163 |
| B020A601 | M            | 108 |
| B020A601 | MF           | 166 |
| B020A621 | M „6GX“      | 109 |
| B020C300 | BSW          | 266 |
| B020C300 | EG M (STI)   | 280 |
| B020C300 | EG UNC (STI) | 284 |
| B020C300 | EG UNF (STI) | 287 |
| B020C300 | LK-M         | 290 |
| B020C300 | M            | 95  |

|          |                |     |
|----------|----------------|-----|
| B020C300 | MF             | 163 |
| B020C300 | UNC            | 205 |
| B020C300 | UNF            | 217 |
| B020C310 | M „4H“         | 96  |
| B020C320 | M „6G“         | 97  |
| B020C330 | M „7G“         | 97  |
| B020C350 | M-LH           | 97  |
| B020K500 | M              | 92  |
| B0306001 | M              | 103 |
| B0309601 | M              | 103 |
| B0309611 | MJ             | 274 |
| B0309611 | UNJC           | 276 |
| B0309611 | UNJF           | 278 |
| B030J401 | M              | 104 |
| B030J411 | MJ             | 275 |
| B030J411 | UNJC           | 277 |
| B030J411 | UNJF           | 279 |
| B0401400 | M              | 95  |
| B040V401 | M              | 103 |
| B0451000 | M              | 94  |
| B0453701 | M              | 109 |
| B0456001 | M              | 103 |
| B0459601 | M              | 103 |
| B0459611 | MJ             | 274 |
| B0459611 | UNJC           | 276 |
| B0459611 | UNJF           | 278 |
| B0461000 | M              | 94  |
| B046L801 | M              | 102 |
| B0501000 | M              | 95  |
| B0501000 | UNC            | 204 |
| B0501000 | UNF            | 216 |
| B0501400 | M              | 95  |
| B0501400 | UNC            | 204 |
| B0501400 | UNF            | 216 |
| B0503000 | M              | 97  |
| B0503000 | UNC            | 205 |
| B0503000 | UNF            | 217 |
| B0503500 | BSW            | 266 |
| B0503500 | EG M (STI)     | 281 |
| B0503500 | M              | 112 |
| B0503500 | MF             | 166 |
| B0503500 | UNC            | 206 |
| B0503500 | UNF            | 218 |
| B0503510 | M „4H“         | 113 |
| B0503510 | MF „4H“        | 167 |
| B0503510 | UNC „3B“       | 207 |
| B0503510 | UNF „3B“       | 219 |
| B0503510 | UNJC           | 277 |
| B0503510 | UNJF           | 279 |
| B0503520 | M „6G“         | 114 |
| B0503530 | M „7G“         | 115 |
| B0503530 | UNC „2B“ +0,05 | 207 |
| B0503540 | M „6H“ +0,1    | 115 |
| B0503550 | M-LH           | 115 |
| B0503700 | M              | 112 |
| B0503G00 | EG M (STI)     | 281 |
| B0503G00 | EG UNC (STI)   | 284 |
| B0503G00 | EG UNF (STI)   | 287 |
| B0503G00 | LK-M           | 291 |
| B0503G00 | M              | 100 |

|          |                |     |
|----------|----------------|-----|
| B0503G10 | MJ             | 274 |
| B0503G10 | UNJC           | 276 |
| B0503G10 | UNJF           | 278 |
| B0504500 | M              | 100 |
| B050C400 | BSW            | 266 |
| B050C400 | EG M (STI)     | 281 |
| B050C400 | M              | 112 |
| B050C400 | MF             | 166 |
| B050C400 | UNC            | 206 |
| B050C400 | UNF            | 218 |
| B050C410 | M „4H“         | 113 |
| B050C410 | MF „4H“        | 167 |
| B050C410 | UNC „3B“       | 207 |
| B050C410 | UNF „3B“       | 219 |
| B050C410 | UNJC           | 277 |
| B050C410 | UNJF           | 279 |
| B050C420 | M „6G“         | 114 |
| B050C430 | M „7G“         | 115 |
| B050C430 | UNC „2B“ +0,05 | 207 |
| B050C440 | M „6H“ +0,1    | 115 |
| B050C450 | M-LH           | 115 |
| B050J300 | M              | 98  |
| B050J300 | UNC            | 205 |
| B050J300 | UNF            | 217 |
| B0513500 | EG M (STI)     | 281 |
| B0513500 | EG UNC (STI)   | 285 |
| B0513500 | EG UNF (STI)   | 288 |
| B0513500 | LK-M           | 291 |
| B0513500 | M              | 113 |
| B0513500 | MF             | 167 |
| B0513500 | UNC            | 206 |
| B0513500 | UNF            | 218 |
| B0513520 | M „6G“         | 114 |
| B0513520 | MF „6G“        | 167 |
| B0513530 | UNF „2B“ +0,05 | 219 |
| B0513700 | M              | 113 |
| B0513700 | UNC            | 207 |
| B0513700 | UNF            | 219 |
| B0513720 | M „6G“         | 114 |
| B0513G00 | M              | 101 |
| B051C400 | EG M (STI)     | 281 |
| B051C400 | EG UNC (STI)   | 285 |
| B051C400 | EG UNF (STI)   | 288 |
| B051C400 | LK-M           | 291 |
| B051C400 | M              | 113 |
| B051C400 | MF             | 167 |
| B051C400 | UNC            | 207 |
| B051C400 | UNF            | 219 |
| B051C420 | M „6G“         | 115 |
| B051C420 | MF „6G“        | 167 |
| B051C430 | UNF „2B“ +0,05 | 219 |
| B0653501 | M              | 116 |
| B065C401 | M              | 116 |
| B0911000 | M              | 318 |
| B0911400 | LK-M           | 350 |
| B0911400 | M              | 318 |
| B0911400 | MF             | 334 |
| B0911400 | UNC            | 340 |
| B0911400 | UNF            | 344 |
| B0911420 | M „6GX“        | 319 |



|          |         |     |          |         |     |          |           |         |          |              |         |
|----------|---------|-----|----------|---------|-----|----------|-----------|---------|----------|--------------|---------|
| B0915G00 | M       | 323 | B5059500 | M       | 323 | C        | C0203110  | M „4H“  | 124      |              |         |
| B0921000 | M       | 318 | B5059500 | MF      | 335 |          | C0203110  | MF „4H“ | 175      |              |         |
| B0921400 | LK-M    | 350 | B505Q800 | M       | 323 | C0100501 | G (BSP)   | 235     | C0203120 | M „6G“       | 124     |
| B0921400 | M       | 318 | B505Q800 | MF      | 335 | C0100501 | M         | 130     | C0203120 | MF „6G“      | 175     |
| B0921400 | MF      | 334 | B5211Q00 | M       | 321 | C0100501 | MF        | 178     | C0203130 | M „7G“       | 125     |
| B0921400 | UNC     | 340 | B5217F00 | M       | 319 | C0100501 | Pg        | 273     | C0203150 | M-LH         | 125     |
| B0921400 | UNF     | 344 | B5217F00 | MF      | 334 | C0100501 | UNC       | 209     | C0203G00 | M            | 128     |
| B0921420 | M „6GX“ | 319 | B521Q200 | M       | 321 | C0100501 | UNF       | 221     | C0204500 | M            | 128     |
| B0925G00 | M       | 323 | B521W700 | M       | 323 | C0101001 | BSF       | 271     | C0208400 | M            | 120     |
| B0963701 | M       | 109 | B521Z700 | M       | 324 | C0101001 | G (BSP)   | 232     | C0208400 | MF           | 168-169 |
| B0973500 | M       | 113 | B521Z700 | MF      | 335 | C0101001 | M         | 120     | C0208401 | G (BSP)      | 232     |
| B0973700 | M       | 113 | B521Z700 | UNC     | 341 | C0101001 | MF        | 168-169 | C0208410 | M „4H“       | 121     |
| B097C400 | M       | 113 | B521Z700 | UNF     | 345 | C0101001 | NPSF      | 247     | C0208410 | MF „4H“      | 170     |
| B0983701 | M       | 110 | B521Z720 | M „6GX“ | 325 | C0101001 | NPSM      | 246     | C0208420 | M „6G“       | 121     |
| B0989501 | M       | 101 | B5231Q00 | M       | 321 | C0101001 | Pg        | 273     | C0208420 | MF „6G“      | 170     |
| B098Q801 | M       | 101 | B5237F00 | M       | 319 | C0101001 | Rp (BSPP) | 243     | C0208430 | M „7G“       | 121     |
| B099C400 | M       | 112 | B523Q200 | M       | 321 | C0101001 | UNEF      | 228     | C0208450 | M-LH         | 121     |
| B1069101 | M       | 105 | B523W700 | M       | 323 | C0102000 | LK-M      | 292     | C0208450 | MF-LH        | 171     |
| B1069401 | M       | 107 | B523Z700 | M       | 324 | C0102001 | M         | 126     | C0208900 | M            | 120     |
| B106R501 | M       | 99  | B523Z700 | MF      | 335 | C0102001 | MF        | 176     | C0208900 | MF           | 168-169 |
| B1088F01 | M       | 109 | B523Z700 | UNC     | 341 | C0109101 | G (BSP)   | 235     | C0208900 | UNC          | 208     |
| B1088F21 | M „6GX“ | 109 | B523Z700 | UNF     | 345 | C0109101 | M         | 130     | C0208900 | UNF          | 220     |
| B108A601 | M       | 109 | B523Z800 | M       | 325 | C0109101 | MF        | 178     | C0208901 | G (BSP)      | 232     |
| B108A621 | M „6GX“ | 109 | B5267F00 | M       | 319 | C0109201 | M         | 126     | C0208910 | M „4H“       | 120     |
| B1099401 | M       | 108 | B5267F00 | MF      | 334 | C0109201 | MF        | 176     | C0208910 | MF „4H“      | 168-169 |
| B1099501 | M       | 101 | B526Q200 | M       | 321 | C0109401 | M         | 133     | C0208910 | UNC „3B“     | 208     |
| B109R501 | M       | 99  | B526Z700 | M       | 324 | C0109401 | MF        | 180     | C0208910 | UNF „3B“     | 220     |
| B1583000 | NPT     | 250 | B5291Q00 | M       | 321 | C010J901 | G (BSP)   | 235     | C0208920 | M „6G“       | 121     |
| B1583000 | NPTF    | 255 | B5296A00 | M       | 320 | C010J901 | M         | 131     | C0208920 | MF „6G“      | 170     |
| B1593000 | NPT     | 250 | B529Q200 | M       | 322 | C010J901 | MF        | 179     | C0208930 | M „7G“       | 121     |
| B1950501 | M       | 105 | B529Z700 | M       | 324 | C010R501 | M         | 127     | C0208950 | M-LH         | 121     |
| B1950901 | M       | 105 | B5311Q00 | M       | 321 | C010R501 | MF        | 176     | C0208950 | MF-LH        | 170     |
| B1950901 | MF      | 163 | B5316A00 | M       | 320 | C0119401 | M         | 133     | C0208F01 | M            | 134     |
| B1951P01 | M       | 99  | B5317F00 | M       | 319 | C0119401 | MF        | 180     | C0208F01 | MF           | 181     |
| B1959101 | M       | 105 | B531Q200 | M       | 322 | C011R501 | M         | 127     | C0208F21 | M „6GX“      | 135     |
| B1959401 | M       | 107 | B531Z700 | M       | 325 | C011R501 | MF        | 177     | C0208J01 | M            | 122     |
| B195R501 | M       | 99  | B531Z800 | M       | 325 | C0181000 | NPT       | 251     | C0208J01 | MF           | 171     |
| B1961P01 | M       | 99  | B5337F00 | M       | 320 | C0181000 | NPTF      | 257     | C0209J01 | M            | 122     |
| B1969401 | M       | 108 | B5337F00 | MF      | 335 | C0183000 | NPT       | 251     | C0209J01 | MF           | 171     |
| B1969501 | M       | 101 | B533Q200 | M       | 322 | C0183000 | NPTF      | 257     | C020A601 | M            | 134     |
| B196R501 | M       | 99  | B535P300 | M       | 319 | C0183000 | Rc (BSPT) | 261     | C020A601 | MF           | 181     |
| B1970100 | M       | 319 | B544Z700 | M       | 326 | C0193000 | NPT       | 251     | C020A621 | M „6GX“      | 135     |
| B2100501 | M       | 119 | B555Z700 | M       | 326 | C0203000 | M         | 123     | C020C300 | BSW          | 267     |
| B2203000 | M       | 118 | B590A601 | M       | 111 | C0203000 | MF        | 174     | C020C300 | EG M (STI)   | 282     |
| B2208900 | M       | 117 | B590A621 | M „6GX“ | 111 | C0203000 | UNC       | 209     | C020C300 | EG UNC (STI) | 286     |
| B220C300 | M       | 118 | B591A601 | M       | 111 | C0203000 | UNF       | 221     | C020C300 | EG UNF (STI) | 289     |
| B2401400 | M       | 117 | B591A621 | M „6GX“ | 111 | C0203001 | G (BSP)   | 233     | C020C300 | LK-M         | 292     |
| B2461000 | M       | 117 | B616A601 | M       | 111 | C0203010 | M „4H“    | 123     | C020C300 | M            | 123     |
| B2503000 | M       | 118 | B616A601 | UNC     | 206 | C0203010 | MF „4H“   | 174     | C020C300 | MF           | 174     |
| B2503500 | M       | 119 | B616A601 | UNF     | 218 | C0203020 | M „6G“    | 124     | C020C300 | UNC          | 209     |
| B250C400 | M       | 119 | B616A621 | M „6GX“ | 111 | C0203020 | MF „6G“   | 175     | C020C300 | UNEF         | 229     |
| B4093701 | M       | 119 | B670J400 | NPT     | 250 | C0203030 | M „7G“    | 125     | C020C300 | UNF          | 221     |
| B4253701 | M       | 110 | B670J400 | NPTF    | 256 | C0203050 | M-LH      | 125     | C020C301 | G (BSP)      | 233     |
| B438J401 | M       | 104 | B8170901 | M       | 102 | C0203100 | M         | 123     | C020C310 | M „4H“       | 124     |
| B438J411 | MJ      | 275 |          |         |     | C0203100 | MF        | 174     | C020C310 | MF „4H“      | 175     |
| B438J411 | UNJC    | 277 |          |         |     | C0203100 | UNC       | 209     | C020C320 | M „6G“       | 125     |
| B438J411 | UNJF    | 279 |          |         |     | C0203100 | UNEF      | 228     | C020C320 | MF „6G“      | 175     |
| B4503701 | M       | 110 |          |         |     | C0203100 | UNF       | 221     | C020C330 | M „7G“       | 125     |
| B498A601 | M       | 111 |          |         |     | C0203101 | G (BSP)   | 233     | C020C350 | M-LH         | 125     |
| B498A621 | M „6GX“ | 111 |          |         |     |          |           |         | C0306001 | M            | 129     |





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|----------|----------------|---------|----------|-------------------|-----|----------|---------|---------|----------|---------|---------|
| C0309601 | M              | 129     | C050C400 | UNC               | 210 | C0579401 | MF      | 188     | C195R501 | MF      | 177     |
| C030J401 | M              | 129     | C050C400 | UNEF              | 229 | C0653501 | M       | 142     | C1960901 | G (BSP) | 235     |
| C0401400 | M              | 123     | C050C400 | UNF               | 222 | C065C401 | M       | 142     | C1961P01 | M       | 127     |
| C0401401 | G (BSP)        | 233     | C050C401 | G (BSP)           | 236 | C0803001 | M       | 148     | C1961P01 | MF      | 177     |
| C0451000 | M              | 122     | C050C410 | M „4H“            | 139 | C0803001 | MF      | 190-191 | C1969401 | M       | 134     |
| C0451000 | MF             | 172-173 | C050C410 | UNC „3B“          | 211 | C0803101 | M       | 148     | C1969401 | MF      | 181     |
| C0451001 | G (BSP)        | 232     | C050C410 | UNF „3B“          | 223 | C0803101 | MF      | 190-191 | C196R501 | M       | 127     |
| C0453701 | M              | 135     | C050C420 | M „6G“            | 140 | C0911400 | G (BSP) | 348     | C196R501 | MF      | 177     |
| C0453701 | MF             | 181     | C050C430 | M „7G“            | 141 | C0911400 | M       | 327     | C2023001 | M       | 149     |
| C0456001 | M              | 129     | C050C430 | UNC „2B“ +0,05    | 211 | C0911400 | MF      | 336     | C2023001 | MF      | 192-193 |
| C0459601 | M              | 129     | C050C440 | M „6H“ +0,1       | 141 | C0911400 | UNC     | 342     | C2023101 | M       | 149     |
| C0461000 | M              | 122     | C050C450 | M-LH              | 141 | C0911400 | UNF     | 346     | C2023101 | MF      | 192-193 |
| C0461000 | MF             | 172-173 | C050C450 | MF-LH             | 187 | C0921400 | G (BSP) | 348     | C2100501 | M       | 145     |
| C0461000 | UNEF           | 228     | C050J300 | M                 | 126 | C0921400 | M       | 327     | C2203000 | M       | 144     |
| C0461001 | G (BSP)        | 233     | C050J300 | MF                | 175 | C0921400 | MF      | 336     | C2208900 | M       | 143     |
| C0501000 | BSW            | 267     | C050J300 | UNC               | 209 | C0921400 | UNC     | 342     | C220C300 | M       | 144     |
| C0501000 | M              | 123     | C050J300 | UNF               | 221 | C0921400 | UNF     | 346     | C2401400 | M       | 143     |
| C0501000 | MF             | 172-173 | C050J301 | G (BSP)           | 234 | C0963701 | M       | 135     | C2461000 | M       | 143     |
| C0501000 | UNC            | 208     | C0513500 | EG M (STI)        | 283 | C0963701 | MF      | 181     | C2503000 | M       | 144     |
| C0501000 | UNF            | 220     | C0513500 | EG UNC (STI)      | 286 | C0973500 | MF      | 186     | C2503500 | M       | 145     |
| C0501001 | G (BSP)        | 233     | C0513500 | EG UNF (STI)      | 289 | C0973700 | M       | 139     | C250C400 | M       | 145     |
| C0501400 | M              | 123     | C0513500 | LK-M              | 293 | C0973700 | MF      | 186     | C4053701 | M       | 136     |
| C0501400 | MF             | 172-173 | C0513500 | M                 | 139 | C097C400 | M       | 139     | C4053701 | MF      | 182     |
| C0501400 | UN-8           | 212     | C0513500 | MF                | 185 | C097C400 | MF      | 186     | C4063701 | M       | 147     |
| C0501400 | UNC            | 208     | C0513500 | NPSF              | 247 | C0983701 | M       | 136     | C4063701 | MF      | 189     |
| C0501400 | UNF            | 220     | C0513500 | NPSM              | 246 | C0983701 | MF      | 182     | C4093701 | M       | 145     |
| C0501401 | G (BSP)        | 233     | C0513500 | Rp (BSPP)         | 244 | C0993500 | M       | 138     | C4253701 | M       | 136     |
| C0503000 | M              | 125     | C0513500 | UNC               | 210 | C099C400 | M       | 139     | C4253701 | MF      | 182     |
| C0503000 | MF             | 175     | C0513500 | UNF               | 222 | C1069101 | M       | 131     | C4283701 | M       | 147     |
| C0503000 | UNC            | 209     | C0513501 | G (BSP)           | 236 | C1069101 | MF      | 179     | C4283701 | MF      | 189     |
| C0503000 | UNF            | 221     | C0513520 | M „6G“            | 140 | C1069401 | M       | 133     | C438J401 | M       | 129     |
| C0503001 | G (BSP)        | 234     | C0513520 | MF „6G“           | 187 | C1069401 | MF      | 180     | C4963701 | M       | 146     |
| C0503500 | BSW            | 268     | C0513530 | UNF „2B“ +0,05    | 223 | C106R501 | M       | 127     | C4963701 | MF      | 188     |
| C0503500 | EG M (STI)     | 283     | C0513531 | G (BSP) „X“ +0,05 | 237 | C106R501 | MF      | 177     | C4973701 | M       | 146     |
| C0503500 | M              | 138     | C0513700 | M                 | 139 | C1088F01 | M       | 135     | C4973701 | MF      | 188     |
| C0503500 | MF             | 183-184 | C0513700 | MF                | 185 | C1088F01 | MF      | 181     | C498A601 | G (BSP) | 235     |
| C0503500 | UN-8           | 212     | C0513700 | UNC               | 211 | C1088F21 | M „6GX“ | 135     | C498A601 | M       | 137     |
| C0503500 | UNC            | 210     | C0513700 | UNF               | 222 | C108A601 | M       | 135     | C498A601 | MF      | 183-184 |
| C0503500 | UNEF           | 229     | C0513701 | G (BSP)           | 237 | C108A601 | MF      | 181     | C498A621 | M „6GX“ | 137     |
| C0503500 | UNF            | 222     | C0513720 | M „6G“            | 140 | C108A621 | M „6GX“ | 135     | C500W700 | M       | 332     |
| C0503501 | G (BSP)        | 236     | C0513720 | MF „6G“           | 187 | C1099401 | M       | 134     | C5059500 | M       | 329     |
| C0503510 | M „4H“         | 139     | C051C400 | EG M (STI)        | 283 | C1099401 | MF      | 181     | C5059500 | MF      | 337     |
| C0503510 | MF „4H“        | 186     | C051C400 | EG UNC (STI)      | 286 | C109R501 | M       | 127     | C505Q800 | M       | 329     |
| C0503510 | UNC „3B“       | 211     | C051C400 | EG UNF (STI)      | 289 | C109R501 | MF      | 177     | C505Q800 | MF      | 337     |
| C0503510 | UNF „3B“       | 223     | C051C400 | LK-M              | 293 | C130K101 | M       | 132     | C5217F00 | M       | 327     |
| C0503520 | M „6G“         | 140     | C051C400 | M                 | 139 | C1583000 | NPT     | 252     | C5217F00 | MF      | 336     |
| C0503530 | M „7G“         | 141     | C051C400 | MF                | 185 | C1583000 | NPTF    | 257     | C521W700 | M       | 329     |
| C0503530 | UNC „2B“ +0,05 | 211     | C051C400 | NPSF              | 247 | C1593000 | NPT     | 252     | C521W700 | MF      | 338     |
| C0503540 | M „6H“ +0,1    | 141     | C051C400 | NPSM              | 246 | C1950501 | M       | 130     | C521Z700 | G (BSP) | 349     |
| C0503550 | M-LH           | 141     | C051C400 | Rp (BSPP)         | 244 | C1950501 | MF      | 179     | C521Z700 | M       | 329     |
| C0503550 | MF-LH          | 187     | C051C400 | UNC               | 211 | C1950901 | M       | 131     | C521Z700 | MF      | 339     |
| C0503700 | M              | 138     | C051C400 | UNF               | 223 | C1950901 | MF      | 179     | C521Z700 | UNC     | 343     |
| C0503G00 | EG M (STI)     | 282     | C051C401 | G (BSP)           | 237 | C1951P01 | M       | 127     | C521Z700 | UNF     | 347     |
| C0503G00 | M              | 128     | C051C420 | M „6G“            | 141 | C1951P01 | MF      | 177     | C5237F00 | M       | 327     |
| C0504500 | M              | 128     | C051C420 | MF „6G“           | 187 | C1959101 | M       | 130     | C5237F00 | MF      | 336     |
| C0504500 | MF             | 178     | C051C430 | UNF „2B“ +0,05    | 223 | C1959101 | MF      | 179     | C523W700 | M       | 329     |
| C050C400 | BSW            | 268     | C051C431 | G (BSP) „X“ +0,05 | 237 | C1959401 | M       | 133     | C523W700 | MF      | 338     |
| C050C400 | EG M (STI)     | 283     | C0539401 | M                 | 147 | C1959401 | MF      | 180     | C523Z700 | G (BSP) | 349     |
| C050C400 | M              | 138     | C0539401 | MF                | 189 | C195K101 | M       | 132     | C523Z700 | M       | 329     |
| C050C400 | MF             | 185     | C0579401 | M                 | 146 | C195R501 | M       | 127     | C523Z700 | MF      | 339     |



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|----------|---------|---------|
| C523Z700 | UNC     | 343     |
| C523Z700 | UNF     | 347     |
| C5267F00 | M       | 328     |
| C5267F00 | MF      | 337     |
| C526Z700 | M       | 330     |
| C529Z700 | M       | 330     |
| C5317F00 | M       | 328     |
| C5317F00 | MF      | 337     |
| C531Z700 | M       | 330     |
| C5337F00 | M       | 328     |
| C5337F00 | MF      | 337     |
| C544Z700 | M       | 331     |
| C555Z700 | M       | 331     |
| C590A601 | G (BSP) | 236     |
| C590A601 | M       | 137     |
| C590A621 | M „6GX“ | 137     |
| C591A601 | M       | 137     |
| C591A601 | MF      | 183-184 |
| C591A621 | M „6GX“ | 137     |
| C594W700 | M       | 333     |
| C595W700 | M       | 333     |
| C599W700 | M       | 332     |
| C616A601 | G (BSP) | 235     |
| C616A601 | M       | 137     |
| C616A601 | MF      | 183-184 |
| C616A601 | UNC     | 210     |
| C616A621 | M „6GX“ | 137     |

### D

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| D0101000 | UNC     | 528 |
| D0101000 | UNEF    | 530 |
| D0101000 | UNF     | 529 |
| D0101030 | M „6e“  | 520 |
| D0101030 | MF „6e“ | 526 |
| D0101050 | M-LH    | 520 |
| D0101050 | MF-LH   | 526 |
| D0101500 | G (BSP) | 531 |
| D0101500 | M       | 520 |
| D0101500 | MF      | 526 |
| D0101500 | UNC     | 528 |
| D0101500 | UNEF    | 530 |
| D0101500 | UNF     | 529 |
| D0102500 | G (BSP) | 531 |
| D0102500 | M       | 522 |
| D0102500 | MF      | 527 |
| D0103000 | M       | 521 |
| D0103000 | MF      | 527 |
| D0103500 | M       | 521 |
| D0191000 | NPT     | 533 |

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| D0191000 | R (BSPT) | 535 |
| D0301500 | M        | 524 |
| D0302500 | G (BSP)  | 532 |
| D0361500 | M        | 523 |
| D0401000 | M        | 525 |

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| F018... | SFM-L-DZ              | 703-704  |
| F019... | SFM-L-DZ              | 703-704  |
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| FZ112600 |                        | 303      |
| FZ112610 |                        | 303      |
| FZ115480 |                        | 304      |
| FZ115490 |                        | 304      |
| FZ115500 |                        | 304      |
| FZ115510 |                        | 304      |
| FZ115520 |                        | 304      |
| FZ115530 |                        | 304      |
| FZ191015 |                        | 301      |
| FZ191115 |                        | 301      |
| FZ191215 |                        | 301      |
| FZ191315 |                        | 301      |
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| FZ191515 |                        | 301      |
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### G

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| GF162121 | G (BSP), Rp (BSPP), W | 437 |
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| GF162121 | Pg                    | 441 |
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| GF162126 | M, MF                 | 429 |
| GF162126 | Pg                    | 441 |
| GF162131 | G (BSP), Rp (BSPP), W | 437 |
| GF162131 | M, MF                 | 429 |
| GF162136 | G (BSP), Rp (BSPP), W | 437 |
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| GF162211 | M, MF                 | 429 |
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| GF162216 | G (BSP), Rp (BSPP), W | 437 |
| GF162216 | M, MF                 | 429 |
| GF162216 | Pg                    | 441 |
| GF162311 | M, MF                 | 430 |
| GF162311 | UN                    | 434 |
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| GF162351 | M, MF                 | 430 |
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| GF162356 | M, MF                 | 430 |
| GF162356 | UN                    | 434 |
| GF162701 | M, MF                 | 429 |
| GF162706 | M, MF                 | 429 |
| GF162721 | G (BSP), Rp (BSPP), W | 437 |
| GF162721 | M, MF                 | 429 |
| GF162721 | Pg                    | 441 |
| GF162726 | G (BSP), Rp (BSPP), W | 437 |
| GF162726 | M, MF                 | 429 |





|          |                       |     |          |                       |     |          |                       |     |          |              |     |
|----------|-----------------------|-----|----------|-----------------------|-----|----------|-----------------------|-----|----------|--------------|-----|
| GF162726 | Pg                    | 441 | GF163211 | Pg                    | 440 | GF1649BC | UN                    | 435 | GF173701 | NPTF         | 456 |
| GF162731 | G (BSP), Rp (BSPP), W | 437 | GF163211 | UN                    | 433 | GF1649CC | M, MF                 | 432 | GF173701 | Rc (BSPT)    | 461 |
| GF162731 | M, MF                 | 429 | GF163216 | G (BSP), Rp (BSPP), W | 436 | GF1649CC | UN                    | 435 | GF173706 | NPT          | 451 |
| GF162736 | G (BSP), Rp (BSPP), W | 437 | GF163216 | LK-M, LK-MF           | 439 | GF165361 | G (BSP), Rp (BSPP), W | 438 | GF173706 | NPTF         | 456 |
| GF162736 | M, MF                 | 429 | GF163216 | M, MF                 | 428 | GF165361 | M, MF                 | 431 | GF173706 | Rc (BSPT)    | 461 |
| GF162751 | G (BSP), Rp (BSPP), W | 437 | GF163216 | Pg                    | 440 | GF165366 | G (BSP), Rp (BSPP), W | 438 | GF173711 | NPT          | 451 |
| GF162751 | M, MF                 | 429 | GF163216 | UN                    | 433 | GF165366 | M, MF                 | 431 | GF173711 | NPTF         | 456 |
| GF162756 | G (BSP), Rp (BSPP), W | 437 | GF163701 | M, MF                 | 428 | GF165371 | G (BSP), Rp (BSPP), W | 438 | GF173711 | Rc (BSPT)    | 461 |
| GF162756 | M, MF                 | 429 | GF163706 | M, MF                 | 428 | GF165371 | M, MF                 | 431 | GF173716 | NPT          | 451 |
| GF162811 | G (BSP), Rp (BSPP), W | 437 | GF163721 | LK-M, LK-MF           | 439 | GF165376 | G (BSP), Rp (BSPP), W | 438 | GF173716 | NPTF         | 456 |
| GF162811 | M, MF                 | 429 | GF163721 | M, MF                 | 428 | GF165376 | M, MF                 | 431 | GF173716 | Rc (BSPT)    | 461 |
| GF162811 | Pg                    | 441 | GF163721 | Pg                    | 440 | GF165381 | G (BSP), Rp (BSPP), W | 438 | GF173731 | NPT          | 451 |
| GF162816 | G (BSP), Rp (BSPP), W | 437 | GF163721 | UN                    | 433 | GF165381 | M, MF                 | 431 | GF173731 | NPTF         | 456 |
| GF162816 | M, MF                 | 429 | GF163726 | LK-M, LK-MF           | 439 | GF165386 | G (BSP), Rp (BSPP), W | 438 | GF173731 | Rc (BSPT)    | 461 |
| GF162816 | Pg                    | 441 | GF163726 | M, MF                 | 428 | GF165386 | M, MF                 | 431 | GF173736 | NPT          | 451 |
| GF162911 | M, MF                 | 430 | GF163726 | Pg                    | 440 | GF165391 | G (BSP), Rp (BSPP), W | 438 | GF173736 | NPTF         | 456 |
| GF162911 | UN                    | 434 | GF163726 | UN                    | 433 | GF165391 | M, MF                 | 431 | GF173736 | Rc (BSPT)    | 461 |
| GF162916 | M, MF                 | 430 | GF163731 | G (BSP), Rp (BSPP), W | 436 | GF165396 | G (BSP), Rp (BSPP), W | 438 | GF173751 | NPT          | 451 |
| GF162916 | UN                    | 434 | GF163731 | LK-M, LK-MF           | 439 | GF165396 | M, MF                 | 431 | GF173751 | NPTF         | 456 |
| GF162921 | M, MF                 | 430 | GF163731 | M, MF                 | 428 | GF165961 | G (BSP), Rp (BSPP), W | 438 | GF173751 | Rc (BSPT)    | 461 |
| GF162921 | UN                    | 434 | GF163731 | UN                    | 433 | GF165961 | M, MF                 | 431 | GF173756 | NPT          | 451 |
| GF162926 | M, MF                 | 430 | GF163736 | G (BSP), Rp (BSPP), W | 436 | GF165966 | G (BSP), Rp (BSPP), W | 438 | GF173756 | NPTF         | 456 |
| GF162926 | UN                    | 434 | GF163736 | LK-M, LK-MF           | 439 | GF165966 | M, MF                 | 431 | GF173756 | Rc (BSPT)    | 461 |
| GF162931 | M, MF                 | 430 | GF163736 | M, MF                 | 428 | GF165971 | G (BSP), Rp (BSPP), W | 438 | GF175301 | NPT (API-LP) | 453 |
| GF162931 | UN                    | 434 | GF163736 | UN                    | 433 | GF165971 | M, MF                 | 431 | GF175301 | NPTF         | 458 |
| GF162936 | M, MF                 | 430 | GF163751 | G (BSP), Rp (BSPP), W | 436 | GF165976 | G (BSP), Rp (BSPP), W | 438 | GF175306 | NPT (API-LP) | 453 |
| GF162936 | UN                    | 434 | GF163751 | LK-M, LK-MF           | 439 | GF165976 | M, MF                 | 431 | GF175306 | NPTF         | 458 |
| GF162951 | M, MF                 | 430 | GF163751 | M, MF                 | 428 | GF165981 | G (BSP), Rp (BSPP), W | 438 | GF175311 | NPT (API-LP) | 453 |
| GF162951 | UN                    | 434 | GF163751 | UN                    | 433 | GF165981 | M, MF                 | 431 | GF175311 | NPTF         | 458 |
| GF162956 | M, MF                 | 430 | GF163756 | G (BSP), Rp (BSPP), W | 436 | GF165986 | G (BSP), Rp (BSPP), W | 438 | GF175316 | NPT (API-LP) | 453 |
| GF162956 | UN                    | 434 | GF163756 | LK-M, LK-MF           | 439 | GF165986 | M, MF                 | 431 | GF175316 | NPTF         | 458 |
| GF163101 | M, MF                 | 428 | GF163756 | M, MF                 | 428 | GF165991 | G (BSP), Rp (BSPP), W | 438 | GF175331 | NPT (API-LP) | 453 |
| GF163106 | M, MF                 | 428 | GF163756 | UN                    | 433 | GF165991 | M, MF                 | 431 | GF175331 | NPTF         | 458 |
| GF163121 | LK-M, LK-MF           | 439 | GF163811 | G (BSP), Rp (BSPP), W | 436 | GF165996 | G (BSP), Rp (BSPP), W | 438 | GF175336 | NPT (API-LP) | 453 |
| GF163121 | M, MF                 | 428 | GF163811 | LK-M, LK-MF           | 439 | GF165996 | M, MF                 | 431 | GF175336 | NPTF         | 458 |
| GF163121 | Pg                    | 440 | GF163811 | M, MF                 | 428 | GF173101 | NPT                   | 451 | GF175351 | NPT (API-LP) | 453 |
| GF163121 | UN                    | 433 | GF163811 | Pg                    | 440 | GF173101 | NPTF                  | 456 | GF175351 | NPTF         | 458 |
| GF163126 | LK-M, LK-MF           | 439 | GF163811 | UN                    | 433 | GF173101 | Rc (BSPT)             | 461 | GF175356 | NPT (API-LP) | 453 |
| GF163126 | M, MF                 | 428 | GF163816 | G (BSP), Rp (BSPP), W | 436 | GF173106 | NPT                   | 451 | GF175356 | NPTF         | 458 |
| GF163126 | Pg                    | 440 | GF163816 | LK-M, LK-MF           | 439 | GF173106 | NPTF                  | 456 | GF175901 | NPT (API-LP) | 453 |
| GF163126 | UN                    | 433 | GF163816 | M, MF                 | 428 | GF173106 | Rc (BSPT)             | 461 | GF175901 | NPTF         | 458 |
| GF163131 | G (BSP), Rp (BSPP), W | 436 | GF163816 | Pg                    | 440 | GF173111 | NPT                   | 451 | GF175906 | NPT (API-LP) | 453 |
| GF163131 | LK-M, LK-MF           | 439 | GF163816 | UN                    | 433 | GF173111 | NPTF                  | 456 | GF175906 | NPTF         | 458 |
| GF163131 | M, MF                 | 428 | GF16436C | M, MF                 | 432 | GF173111 | Rc (BSPT)             | 461 | GF175911 | NPT (API-LP) | 453 |
| GF163131 | UN                    | 433 | GF16436C | UN                    | 435 | GF173116 | NPT                   | 451 | GF175911 | NPTF         | 458 |
| GF163136 | G (BSP), Rp (BSPP), W | 436 | GF16437C | M, MF                 | 432 | GF173116 | NPTF                  | 456 | GF175916 | NPT (API-LP) | 453 |
| GF163136 | LK-M, LK-MF           | 439 | GF16437C | UN                    | 435 | GF173116 | Rc (BSPT)             | 461 | GF175916 | NPTF         | 458 |
| GF163136 | M, MF                 | 428 | GF16438C | M, MF                 | 432 | GF173131 | NPT                   | 451 | GF175931 | NPT (API-LP) | 453 |
| GF163136 | UN                    | 433 | GF16438C | UN                    | 435 | GF173131 | NPTF                  | 456 | GF175931 | NPTF         | 458 |
| GF163151 | G (BSP), Rp (BSPP), W | 436 | GF1643BC | M, MF                 | 432 | GF173131 | Rc (BSPT)             | 461 | GF175936 | NPT (API-LP) | 453 |
| GF163151 | LK-M, LK-MF           | 439 | GF1643BC | UN                    | 435 | GF173136 | NPT                   | 451 | GF175936 | NPTF         | 458 |
| GF163151 | M, MF                 | 428 | GF1643CC | M, MF                 | 432 | GF173136 | NPTF                  | 456 | GF175951 | NPT (API-LP) | 453 |
| GF163151 | UN                    | 433 | GF1643CC | UN                    | 435 | GF173136 | Rc (BSPT)             | 461 | GF175951 | NPTF         | 458 |
| GF163156 | G (BSP), Rp (BSPP), W | 436 | GF16496C | M, MF                 | 432 | GF173151 | NPT                   | 451 | GF175956 | NPT (API-LP) | 453 |
| GF163156 | LK-M, LK-MF           | 439 | GF16496C | UN                    | 435 | GF173151 | NPTF                  | 456 | GF175956 | NPTF         | 458 |
| GF163156 | M, MF                 | 428 | GF16497C | M, MF                 | 432 | GF173151 | Rc (BSPT)             | 461 | GF193101 | NPT          | 452 |
| GF163156 | UN                    | 433 | GF16497C | UN                    | 435 | GF173156 | NPT                   | 451 | GF193101 | NPTF         | 457 |
| GF163211 | G (BSP), Rp (BSPP), W | 436 | GF16498C | M, MF                 | 432 | GF173156 | NPTF                  | 456 | GF193101 | Rc (BSPT)    | 462 |
| GF163211 | LK-M, LK-MF           | 439 | GF16498C | UN                    | 435 | GF173156 | Rc (BSPT)             | 461 | GF193106 | NPT          | 452 |
| GF163211 | M, MF                 | 428 | GF1649BC | M, MF                 | 432 | GF173701 | NPT                   | 451 | GF193106 | NPTF         | 457 |



|          |              |     |          |              |     |          |         |     |          |            |     |
|----------|--------------|-----|----------|--------------|-----|----------|---------|-----|----------|------------|-----|
| GF193106 | Rc (BSPT)    | 462 | GF195901 | NPTF         | 459 | GF322101 | UNC     | 418 | GF335126 | MF         | 417 |
| GF193111 | NPT          | 452 | GF195906 | NPT (API-LP) | 454 | GF322101 | UNF     | 420 | GF335721 | M          | 410 |
| GF193111 | NPTF         | 457 | GF195906 | NPTF         | 459 | GF322106 | G (BSP) | 423 | GF335721 | MF         | 416 |
| GF193111 | Rc (BSPT)    | 462 | GF195911 | NPT (API-LP) | 454 | GF322106 | M       | 409 | GF335726 | M          | 411 |
| GF193116 | NPT          | 452 | GF195911 | NPTF         | 459 | GF322106 | MF      | 415 | GF335726 | MF         | 417 |
| GF193116 | NPTF         | 457 | GF195916 | NPT (API-LP) | 454 | GF322106 | UNC     | 419 | GF342101 | M          | 408 |
| GF193116 | Rc (BSPT)    | 462 | GF195916 | NPTF         | 459 | GF322106 | UNF     | 421 | GF342101 | UNC        | 418 |
| GF193131 | NPT          | 452 | GF195931 | NPT (API-LP) | 454 | GF322701 | G (BSP) | 422 | GF342106 | M          | 409 |
| GF193131 | NPTF         | 457 | GF195931 | NPTF         | 459 | GF322701 | M       | 408 | GF342106 | UNC        | 419 |
| GF193131 | Rc (BSPT)    | 462 | GF195936 | NPT (API-LP) | 454 | GF322701 | MF      | 414 | GF342701 | M          | 408 |
| GF193136 | NPT          | 452 | GF195936 | NPTF         | 459 | GF322701 | UNC     | 418 | GF342701 | UNC        | 418 |
| GF193136 | NPTF         | 457 | GF195951 | NPT (API-LP) | 454 | GF322701 | UNF     | 420 | GF342706 | M          | 409 |
| GF193136 | Rc (BSPT)    | 462 | GF195951 | NPTF         | 459 | GF322706 | G (BSP) | 423 | GF342706 | UNC        | 419 |
| GF193151 | NPT          | 452 | GF195956 | NPT (API-LP) | 454 | GF322706 | M       | 409 | GF422201 | EG M (STI) | 386 |
| GF193151 | NPTF         | 457 | GF195956 | NPTF         | 459 | GF322706 | MF      | 415 | GF422201 | G (BSP)    | 384 |
| GF193151 | Rc (BSPT)    | 462 | GF253101 | M, MF        | 466 | GF322706 | UNC     | 419 | GF422201 | M          | 370 |
| GF193156 | NPT          | 452 | GF253106 | G (BSP)      | 472 | GF322706 | UNF     | 421 | GF422201 | MF         | 376 |
| GF193156 | NPTF         | 457 | GF253106 | M, MF        | 466 | GF323101 | M       | 406 | GF422201 | UNC        | 380 |
| GF193156 | Rc (BSPT)    | 462 | GF253701 | M, MF        | 466 | GF323101 | MF      | 412 | GF422201 | UNF        | 382 |
| GF193701 | NPT          | 452 | GF253701 | UNC, UNF     | 470 | GF323106 | M       | 407 | GF422206 | EG M (STI) | 387 |
| GF193701 | NPTF         | 457 | GF253706 | G (BSP)      | 472 | GF323106 | MF      | 413 | GF422206 | G (BSP)    | 385 |
| GF193701 | Rc (BSPT)    | 462 | GF253706 | M, MF        | 466 | GF323701 | M       | 406 | GF422206 | M          | 371 |
| GF193706 | NPT          | 452 | GF253706 | UNC, UNF     | 470 | GF323701 | MF      | 412 | GF422206 | MF         | 377 |
| GF193706 | NPTF         | 457 | GF26A129 | M, MF        | 473 | GF323706 | M       | 407 | GF422206 | UNC        | 381 |
| GF193706 | Rc (BSPT)    | 462 | GF26A129 | UNC, UNF     | 474 | GF323706 | MF      | 413 | GF422206 | UNF        | 383 |
| GF193711 | NPT          | 452 | GF26A129 | UNF          | 475 | GF332101 | G (BSP) | 422 | GF422251 | M          | 372 |
| GF193711 | NPTF         | 457 | GF26A729 | M, MF        | 473 | GF332101 | M       | 408 | GF422256 | M          | 373 |
| GF193711 | Rc (BSPT)    | 462 | GF26A729 | UNC, UNF     | 474 | GF332101 | MF      | 414 | GF422801 | EG M (STI) | 386 |
| GF193716 | NPT          | 452 | GF26A729 | UNF          | 475 | GF332101 | UNC     | 418 | GF422801 | G (BSP)    | 384 |
| GF193716 | NPTF         | 457 | GF273101 | M, MF        | 467 | GF332101 | UNF     | 420 | GF422801 | M          | 370 |
| GF193716 | Rc (BSPT)    | 462 | GF273106 | M, MF        | 467 | GF332106 | G (BSP) | 423 | GF422801 | MF         | 376 |
| GF193731 | NPT          | 452 | GF273106 | UNC, UNF     | 471 | GF332106 | M       | 409 | GF422801 | UNC        | 380 |
| GF193731 | NPTF         | 457 | GF273106 | UNF          | 471 | GF332106 | MF      | 415 | GF422801 | UNF        | 382 |
| GF193731 | Rc (BSPT)    | 462 | GF273701 | M, MF        | 467 | GF332106 | UNC     | 419 | GF422806 | EG M (STI) | 387 |
| GF193736 | NPT          | 452 | GF273706 | M, MF        | 467 | GF332106 | UNF     | 421 | GF422806 | G (BSP)    | 385 |
| GF193736 | NPTF         | 457 | GF273706 | UNC, UNF     | 471 | GF332701 | G (BSP) | 422 | GF422806 | M          | 371 |
| GF193736 | Rc (BSPT)    | 462 | GF273706 | UNF          | 471 | GF332701 | M       | 408 | GF422806 | MF         | 377 |
| GF193751 | NPT          | 452 | GF283129 | M, MF        | 476 | GF332701 | MF      | 414 | GF422806 | UNC        | 381 |
| GF193751 | NPTF         | 457 | GF283129 | UNC, UNF     | 477 | GF332701 | UNC     | 418 | GF422806 | UNF        | 383 |
| GF193751 | Rc (BSPT)    | 462 | GF283129 | UNF          | 478 | GF332701 | UNF     | 420 | GF422851 | M          | 372 |
| GF193756 | NPT          | 452 | GF283729 | M, MF        | 476 | GF332706 | G (BSP) | 423 | GF422856 | M          | 373 |
| GF193756 | NPTF         | 457 | GF283729 | UNC, UNF     | 477 | GF332706 | M       | 409 | GF429246 | M          | 374 |
| GF193756 | Rc (BSPT)    | 462 | GF283729 | UNF          | 478 | GF332706 | MF      | 415 | GF429248 | M          | 375 |
| GF195301 | NPT (API-LP) | 454 | GF293146 | M, MF        | 469 | GF332706 | UNC     | 419 | GF429846 | M          | 374 |
| GF195301 | NPTF         | 459 | GF293746 | M, MF        | 469 | GF332706 | UNF     | 421 | GF429848 | M          | 375 |
| GF195306 | NPT (API-LP) | 454 | GF2A3106 | M, MF        | 468 | GF333101 | LK-M    | 424 | GF432201 | EG M (STI) | 386 |
| GF195306 | NPTF         | 459 | GF2A3706 | M, MF        | 468 | GF333101 | M       | 406 | GF432201 | G (BSP)    | 384 |
| GF195311 | NPT (API-LP) | 454 | GF2BA129 | M, MF        | 473 | GF333101 | MF      | 412 | GF432201 | M          | 370 |
| GF195311 | NPTF         | 459 | GF2BA129 | UNC, UNF     | 474 | GF333106 | LK-M    | 425 | GF432201 | MF         | 376 |
| GF195316 | NPT (API-LP) | 454 | GF2BA129 | UNF          | 475 | GF333106 | M       | 407 | GF432201 | UNC        | 380 |
| GF195316 | NPTF         | 459 | GF2BA729 | M, MF        | 473 | GF333106 | MF      | 413 | GF432201 | UNF        | 382 |
| GF195331 | NPT (API-LP) | 454 | GF2BA729 | UNC, UNF     | 474 | GF333701 | LK-M    | 424 | GF432206 | EG M (STI) | 387 |
| GF195331 | NPTF         | 459 | GF2BA729 | UNF          | 475 | GF333701 | M       | 406 | GF432206 | G (BSP)    | 385 |
| GF195336 | NPT (API-LP) | 454 | GF303701 | M            | 406 | GF333701 | MF      | 412 | GF432206 | M          | 371 |
| GF195336 | NPTF         | 459 | GF303706 | M            | 407 | GF333706 | LK-M    | 425 | GF432206 | MF         | 377 |
| GF195351 | NPT (API-LP) | 454 | GF313701 | M            | 406 | GF333706 | M       | 407 | GF432206 | UNC        | 381 |
| GF195351 | NPTF         | 459 | GF313706 | M            | 407 | GF333706 | MF      | 413 | GF432206 | UNF        | 383 |
| GF195356 | NPT (API-LP) | 454 | GF322101 | G (BSP)      | 422 | GF335121 | M       | 410 | GF432251 | M          | 372 |
| GF195356 | NPTF         | 459 | GF322101 | M            | 408 | GF335121 | MF      | 416 | GF432256 | M          | 373 |
| GF195901 | NPT (API-LP) | 454 | GF322101 | MF           | 414 | GF335126 | M       | 411 | GF432801 | EG M (STI) | 386 |



|          |                       |     |          |                       |     |          |              |         |          |     |
|----------|-----------------------|-----|----------|-----------------------|-----|----------|--------------|---------|----------|-----|
| GF432801 | G (BSP)               | 384 | GF643205 | G (BSP), Rp (BSPP), W | 499 | GF74682C | UNC          | 392     | GZ341000 | 494 |
| GF432801 | M                     | 370 | GF643205 | M, MF, UN             | 499 | GF74682C | UNF          | 393     | GZ341001 | 496 |
| GF432801 | MF                    | 376 | GF643207 | G (BSP), Rp (BSPP), W | 499 | GF7B622B | M            | 394     | GZ341012 | 498 |
| GF432801 | UNC                   | 380 | GF643207 | M, MF, UN             | 499 | GF7B622B | MF           | 395     | GZ341021 | 496 |
| GF432801 | UNF                   | 382 | GF643207 | NPT                   | 499 | GF7B622B | MJ           | 398     | GZ341032 | 498 |
| GF432806 | EG M (STI)            | 387 | GF643207 | Tr                    | 499 | GF7B622B | UNC          | 396     | GZ341040 | 494 |
| GF432806 | G (BSP)               | 385 | GF643305 | G (BSP), Rp (BSPP), W | 501 | GF7B622B | UNF          | 397     | GZ341050 | 494 |
| GF432806 | M                     | 371 | GF643305 | M, MF, UN             | 501 | GF7B622B | UNJC         | 399     | GZ341101 | 496 |
| GF432806 | MF                    | 377 | GF643307 | G (BSP), Rp (BSPP), W | 501 | GF7B622B | UNJF         | 400     | GZ341112 | 498 |
| GF432806 | UNC                   | 381 | GF643307 | M, MF, UN             | 501 | GF7B682B | M            | 394     | GZ341121 | 496 |
| GF432806 | UNF                   | 383 | GF643307 | Tr                    | 501 | GF7B682B | MF           | 395     | GZ341131 | 496 |
| GF432851 | M                     | 372 | GF643405 | G (BSP), Rp (BSPP), W | 503 | GF7B682B | MJ           | 398     | GZ341143 | 500 |
| GF432856 | M                     | 373 | GF643405 | M, MF, UN             | 503 | GF7B682B | UNC          | 396     | GZ341153 | 500 |
| GF439246 | M                     | 374 | GF643407 | G (BSP), Rp (BSPP), W | 503 | GF7B682B | UNF          | 397     | GZ341200 | 494 |
| GF439246 | MF                    | 378 | GF643407 | M, MF, UN             | 503 | GF7B682B | UNJC         | 399     | GZ341201 | 496 |
| GF439248 | M                     | 375 | GF643407 | Tr                    | 503 | GF7B682B | UNJF         | 400     | GZ341202 | 498 |
| GF439248 | MF                    | 379 | GF643505 | M, MF, UN             | 505 | GF7C622B | M            | 394     | GZ341203 | 500 |
| GF439846 | M                     | 374 | GF643507 | M, MF, UN             | 505 | GF7C622B | MF           | 395     | GZ341211 | 496 |
| GF439846 | MF                    | 378 | GF643507 | Tr                    | 505 | GF7C622B | MJ           | 398     | GZ341212 | 498 |
| GF439848 | M                     | 375 | GF65130A | M, MF, UN             | 489 | GF7C622B | UNC          | 396     | GZ341221 | 496 |
| GF439848 | MF                    | 379 | GF65310A | G (BSP), Rp (BSPP), W | 489 | GF7C622B | UNF          | 397     | GZ341231 | 496 |
| GF442201 | M                     | 370 | GF65310A | M, MF, UN             | 489 | GF7C622B | UNJC         | 399     | GZ343003 | 500 |
| GF442201 | UNC                   | 380 | GF65310A | NPT                   | 490 | GF7C622B | UNJF         | 400     | GZ343014 | 502 |
| GF442206 | M                     | 371 | GF65320A | G (BSP), Rp (BSPP), W | 489 | GF7C682B | M            | 394     | GZ343103 | 500 |
| GF442206 | UNC                   | 381 | GF65320A | M, MF, UN             | 489 | GF7C682B | MF           | 395     | GZ343114 | 502 |
| GF442251 | M                     | 372 | GF65330A | G (BSP), Rp (BSPP), W | 489 | GF7C682B | MJ           | 398     | GZ344003 | 500 |
| GF442256 | M                     | 373 | GF65330A | M, MF, UN             | 489 | GF7C682B | UNC          | 396     | GZ344014 | 502 |
| GF442801 | M                     | 370 | GF65330A | NPT                   | 490 | GF7C682B | UNF          | 397     | GZ344024 | 502 |
| GF442801 | UNC                   | 380 | GF65340A | G (BSP), Rp (BSPP), W | 489 | GF7C682B | UNJC         | 399     | GZ344035 | 504 |
| GF442806 | M                     | 371 | GF65340A | M, MF, UN             | 489 | GF7C682B | UNJF         | 400     | GZ344045 | 504 |
| GF442806 | UNC                   | 381 | GF65350A | G (BSP), Rp (BSPP), W | 489 | GF7C682B | UNJF         | 400     | GZ344103 | 500 |
| GF442851 | M                     | 372 | GF65350A | M, MF, UN             | 489 | GFB3512C | M, MF        | 444     | GZ344114 | 502 |
| GF442856 | M                     | 373 | GF65350A | NPT                   | 490 | GFB3512C | MF           | 444     | GZ344124 | 502 |
| GF449246 | M                     | 374 | GF65350A | NPT                   | 490 | GFB3512C | UNC, UNF, UN | 445     | GZ344203 | 500 |
| GF449248 | M                     | 375 | GF65360A | G (BSP), Rp (BSPP), W | 489 | GFB3512C | UNF, UN      | 445     | GZ344204 | 502 |
| GF449248 | M                     | 375 | GF65360A | M, MF, UN             | 489 | GFB3572C | M, MF        | 444     | GZ349010 | 495 |
| GF449846 | M                     | 374 | GF65360A | NPT                   | 490 | GFB3572C | MF           | 444     | GZ349011 | 490 |
| GF449848 | M                     | 375 | GF65370A | G (BSP), Rp (BSPP), W | 489 | GFB3572C | UNC, UNF, UN | 445     | GZ349011 | 497 |
| GF603117 | G (BSP), Rp (BSPP), W | 483 | GF65370A | M, MF, UN             | 489 | GFB3572C | UNF, UN      | 445     | GZ349012 | 490 |
| GF603117 | M, MF                 | 483 | GF663005 |                       | 506 | GFB4513C | M, MF        | 446     | GZ349012 | 499 |
| GF603117 | UN                    | 483 | GF663007 |                       | 506 | GFB4513C | MF           | 446     | GZ349013 | 490 |
| GF603147 | G (BSP), Rp (BSPP), W | 485 | GF663105 |                       | 506 | GFB4513C | UNC, UNF, UN | 447     | GZ349013 | 501 |
| GF603147 | M, MF                 | 485 | GF663107 |                       | 506 | GFB4513C | UNF, UN      | 447     | GZ349014 | 490 |
| GF613127 | G (BSP), Rp (BSPP), W | 487 | GF663205 |                       | 506 | GFB4573C | M, MF        | 446     | GZ349014 | 503 |
| GF613127 | M, MF, UN             | 487 | GF663207 |                       | 506 | GFB4573C | MF           | 446     | GZ349015 | 505 |
| GF641007 | M, MF                 | 495 | GF663305 |                       | 506 | GFB4573C | UNC, UNF, UN | 447     | GZ349020 | 495 |
| GF641107 | M, MF                 | 497 | GF663307 |                       | 506 | GFB4573C | UNF, UN      | 447     | GZ349021 | 490 |
| GF641207 | M, MF                 | 499 | GF663405 |                       | 506 | GZ301110 |              | 482     | GZ349021 | 497 |
| GF641307 | M, MF                 | 501 | GF663407 |                       | 506 | GZ301130 |              | 482     | GZ349022 | 490 |
| GF641407 | M, MF                 | 503 | GF733709 | M                     | 401 | GZ301140 |              | 482     | GZ349022 | 499 |
| GF643005 | G (BSP), Rp (BSPP), W | 495 | GF733709 | UNC                   | 402 | GZ301310 |              | 482     | GZ349023 | 490 |
| GF643005 | M, MF, UN             | 495 | GF733709 | UNF                   | 403 | GZ301320 |              | 482     | GZ349023 | 501 |
| GF643007 | G (BSP), Rp (BSPP), W | 495 | GF743709 | M                     | 401 | GZ301330 |              | 482     | GZ349024 | 490 |
| GF643007 | M, MF, UN             | 495 | GF743709 | UNC                   | 402 | GZ301340 |              | 482     | GZ349024 | 503 |
| GF643007 | Tr                    | 495 | GF743709 | UNF                   | 403 | GZ303010 |              | 484     | GZ349025 | 505 |
| GF643105 | G (BSP), Rp (BSPP), W | 497 | GF74622C | M                     | 390 | GZ309010 |              | 483     | GZ349040 | 495 |
| GF643105 | M, MF, UN             | 497 | GF74622C | MF                    | 391 | GZ309020 |              | 483-485 | GZ349041 | 490 |
| GF643107 | G (BSP), Rp (BSPP), W | 497 | GF74622C | UNC                   | 392 | GZ309210 |              | 485     | GZ349041 | 497 |
| GF643107 | M, MF, UN             | 497 | GF74622C | UNF                   | 393 | GZ311330 |              | 486     | GZ349042 | 490 |
| GF643107 | NPT                   | 497 | GF74682C | M                     | 390 | GZ319020 |              | 487     | GZ349042 | 499 |
| GF643107 | Tr                    | 497 | GF74682C | MF                    | 391 | GZ319060 |              | 487     |          |     |



|          |         |     |          |         |          |          |         |          |          |       |        |
|----------|---------|-----|----------|---------|----------|----------|---------|----------|----------|-------|--------|
| GZ349043 |         | 501 | GZ5263B5 | 508     | H0211059 | MF-LH    | 198     | M0601000 | M        | 160   |        |
| GZ349043 | 483-490 |     | GZ5391A4 | 508     | H0300901 | M        | 153     | M0601000 | MF       | 203   |        |
| GZ349044 |         | 490 | GZ5391B4 | 508     | H0310901 | M        | 153     | M0621000 | M        | 160   |        |
| GZ349044 |         | 503 | GZ5391B5 | 508     | H0310919 | M        | 153     |          |          |       |        |
| GZ349045 |         | 505 | GZ5521A4 | 508     | H0310929 | M        | 153     |          |          |       |        |
| GZ349053 |         | 501 | GZ56E1A4 | 508     | H0320901 | MF       | 199     |          |          |       |        |
| GZ349054 |         | 503 | GZ7243AA | 509     | H0330901 | MF       | 199     |          |          |       |        |
| GZ349055 |         | 505 | GZ7243AB | 509     | H0330909 | MF       | 199     |          |          |       |        |
| GZ34A000 |         | 494 | GZ7243AC | 509     | H0403001 | M        | 155     |          |          |       |        |
| GZ34A001 |         | 496 | GZ7243AD | 509     | H0403001 | UNC      | 215     | QB002002 |          | 758   |        |
| GZ34A002 |         | 498 | GZ7263AE | 509     | H0403101 | M        | 157     | QB002003 |          | 758   |        |
| GZ34A003 |         | 500 | GZ7263AF | 509     | H0407101 | M        | 159     | QB002005 |          | 758   |        |
| GZ34A010 |         | 494 | GZ7391AA | 509     | H0413019 | M        | 154     |          |          |       |        |
| GZ34C000 |         | 494 | GZ7391AB | 509     | H0413019 | UNC      | 214     |          |          |       |        |
| GZ34C001 |         | 496 | GZ7391AC | 509     | H0413119 | M        | 156     |          |          |       |        |
| GZ34C002 |         | 498 | GZ7391AD | 509     | H0417119 | M        | 158     |          |          |       |        |
| GZ34C010 |         | 494 | GZ73A1AE | 509     | H0423001 | M        | 154     |          |          |       |        |
| GZ34C020 |         | 494 | GZ73A1AF | 509     | H0423001 | UNC      | 214     |          |          |       |        |
| GZ351000 |         | 494 | GZ7521AB | 509     | H0423019 | M        | 154     |          |          |       |        |
| GZ351001 |         | 496 | GZ7521AC | 509     | H0423019 | UNC      | 214     | TA107725 |          | 62    |        |
| GZ351002 |         | 498 | GZ75D1AA | 509     | H0423029 | M        | 154     | TA201344 |          | 25-28 |        |
| GZ352003 |         | 500 | GZ80F0C4 | 506     | H0423029 | UNC      | 214     | TA201544 |          | 33-36 |        |
| GZ352004 |         | 502 | GZ80G0C4 | 506     | H0423101 | M        | 156     | TA201724 |          | 49-52 |        |
| GZ352005 |         | 504 | GZ80H0C4 | 506     | H0423119 | M        | 156     | TA211344 |          | 29-32 |        |
| GZ353000 |         | 494 | GZ80I0C4 | 506     | H0423129 | M        | 156     | TA211544 |          | 37-41 |        |
| GZ353001 |         | 496 | GZ80J0C4 | 506     | H0427101 | M        | 158     | TA211724 |          | 53-57 |        |
| GZ353002 |         | 498 |          |         | H0427119 | M        | 158     | TA212444 |          | 58-61 |        |
| GZ353003 |         | 500 |          |         | H0427129 | M        | 158     | TA223344 |          | 42-45 |        |
| GZ353004 |         | 502 |          |         | H0433001 | M        | 155     | TA233344 |          | 46-48 |        |
| GZ353005 |         | 504 |          |         | H0433001 | UNC      | 215     | TA501344 |          | 25-28 |        |
| GZ359310 |         | 495 |          |         | H0433101 | M        | 157     | TA501544 |          | 33-36 |        |
| GZ359311 |         | 497 |          |         | H0437101 | M        | 159     | TA501724 |          | 49-52 |        |
| GZ359312 |         | 499 |          |         | H0453001 | G (BSP)  | 241     | TA511344 |          | 29-32 |        |
| GZ359313 |         | 501 | H0101001 | BSF     | 272      | H0453001 | M       | 155      | TA511544 |       | 37-41  |
| GZ359314 |         | 503 | H0101001 | BSW     | 269      | H0453001 | MF      | 201      | TA511724 |       | 53-57  |
| GZ359315 |         | 505 | H0101001 | M       | 152      | H0453001 | UNC     | 215      | TA512444 |       | 58-61  |
| GZ38100A |         | 488 | H0101001 | UNC     | 213      | H0453001 | UNF     | 227      | TA601344 |       | 25-28  |
| GZ38100B |         | 488 | H0111001 | BSF     | 272      | H0453101 | M       | 157      | TA611344 |       | 29-32  |
| GZ38100C |         | 488 | H0111001 | BSW     | 269      | H0463009 | G (BSP) | 240      | TCHDHS63 |       | 68     |
| GZ38100D |         | 488 | H0111001 | M       | 152      | H0463009 | MF      | 200      | TCHDRD20 |       | 69     |
| GZ38100E |         | 488 | H0111001 | UNC     | 213      | H0463009 | UNF     | 226      | TCHDSK40 |       | 69     |
| GZ38100F |         | 488 | H0111019 | BSF     | 272      | H0473001 | G (BSP) | 240      | TCHDSK50 |       | 69     |
| GZ38100G |         | 488 | H0111019 | BSW     | 269      | H0473001 | MF      | 200      | TCWNHS63 |       | 66     |
| GZ38110A |         | 488 | H0111019 | M       | 152      | H0473001 | UNF     | 226      | TCWNSK40 |       | 67     |
| GZ38110B |         | 488 | H0111019 | UNC     | 213      | H0473009 | G (BSP) | 240      | TCWNSK50 |       | 67     |
| GZ38110C |         | 488 | H0111029 | BSF     | 272      | H0473009 | MF      | 200      | TE213324 |       | 24     |
| GZ38110D |         | 488 | H0111029 | BSW     | 269      | H0473009 | UNF     | 226      | TG203344 |       | 63     |
| GZ38110E |         | 488 | H0111029 | M       | 152      | H0483001 | G (BSP) | 241      | TN103344 |       | 64     |
| GZ38110F |         | 488 | H0111029 | UNC     | 213      | H0483001 | M       | 155      | TWA01001 |       | 66     |
| GZ38110G |         | 488 | H0201001 | G (BSP) | 239      | H0483001 | MF      | 201      | TWA01002 |       | 68     |
| GZ38120A |         | 488 | H0201001 | MF      | 196-197  | H0483001 | UNC     | 215      | TWA02001 |       | 66     |
| GZ38120B |         | 488 | H0201001 | UNF     | 225      | H0483001 | UNF     | 227      | TWA03001 |       | 70     |
| GZ38120C |         | 488 | H0201051 | MF-LH   | 198      | H0483101 | M       | 157      | TWA03002 |       | 70     |
| GZ38120D |         | 488 | H0211001 | G (BSP) | 239      |          |         |          | TWA03003 |       | 70     |
| GZ38120E |         | 488 | H0211001 | MF      | 196-197  |          |         |          | TWA04001 |       | 67, 69 |
| GZ38120F |         | 488 | H0211001 | UNF     | 225      |          |         |          | TWB03001 |       | 66, 68 |
| GZ38120G |         | 488 | H0211009 | G (BSP) | 239      |          |         |          | TWB03002 |       | 66, 68 |
| GZ5243A4 |         | 508 | H0211009 | MF      | 196-197  |          |         |          |          |       |        |
| GZ5263A4 |         | 508 | H0211009 | UNF     | 225      |          |         |          |          |       |        |
| GZ5263B4 |         | 508 | H0211051 | MF-LH   | 198      |          |         |          |          |       |        |





**Hinweis:**

Die allgemeinen Geschäftsbedingungen können Sie bei der für Sie zuständigen Landesvertretung anfordern.

**Please note:**

If you want specific General Sales Conditions for your own country, please ask your local contact.

**I. Allgemeines**

1. Allen Lieferungen und Leistungen liegen diese Bedingungen sowie etwaige gesonderte vertragliche Vereinbarungen zugrunde. Abweichende Einkaufsbedingungen des Bestellers werden auch durch Auftragsannahme nicht Vertragsinhalt.

Ein Vertrag kommt – mangels besonderer Vereinbarung – mit der schriftlichen Auftragsbestätigung des Lieferanten zustande.

2. Der Lieferer behält sich an Mustern, Kosten- voranschlägen, Zeichnungen u.ä. Informationen körperlicher und unkörperlicher Art – auch in elektronischer Form – Eigentums- und Urheberrechte vor; sie dürfen Dritten nicht zugänglich gemacht werden. Der Lieferer verpflichtet sich, vom Besteller als vertraulich bezeichnete Informationen und Unterlagen nur mit dessen Zustimmung Dritten zugänglich zu machen.
3. Muster werden nur gegen Berechnung geliefert.
4. Mündliche Nebenabreden bestehen nicht. Änderungen bedürfen der Schriftform.

**II. Preis und Zahlung**

1. Die Preise gelten mangels besonderer Vereinbarung ab Werk einschließlich Verladung im Werk, jedoch ausschließlich Verpackung und Entladung. Zu den Preisen kommt die Umsatzsteuer in der jeweiligen gesetzlichen Höhe hinzu.
2. Mangels besonderer Vereinbarung ist die Zahlung sofort nach Lieferung und ohne jeden Abzug á Konto des Lieferanten zu leisten. Berechnet wird die jeweilige Liefermenge.
3. Das Recht, Zahlungen zurückzuhalten, steht dem Besteller nur insoweit zu, als seine Gegenansprüche unbestritten oder rechtskräftig festgestellt sind.
4. Das Recht des Bestellers, mit Gegenansprüchen aus anderen Rechtsverhältnissen aufzurechnen, steht ihm nur insoweit zu, als sie unbestritten oder rechtskräftig festgestellt sind.

**III. Lieferzeit, Lieferverzögerung**

1. Die Lieferzeit ergibt sich aus den Vereinbarungen der Vertragsparteien. Ihre Einhaltung durch den Lieferer setzt voraus, dass alle

kaufmännischen und technischen Fragen zwischen den Vertragsparteien geklärt sind und der Besteller alle ihm obliegenden Verpflichtungen, wie z.B. Beibringung der erforderlichen behördlichen Bescheinigungen oder Genehmigungen oder die Leistung einer Anzahlung erfüllt hat. Ist dies nicht der Fall, so verlängert sich die Lieferzeit angemessen. Dies gilt nicht, soweit der Lieferer die Verzögerung zu vertreten hat.

2. Die Einhaltung der Lieferzeit steht unter dem Vorbehalt richtiger und rechtzeitiger Selbstbelieferung. Sich abzeichnende Verzögerungen teilt der Lieferer sobald als möglich mit.
3. Die Lieferzeit ist eingehalten, wenn der Liefergegenstand bis zu ihrem Ablauf das Werk des Lieferanten verlassen hat oder die Versandbereitschaft gemeldet ist. Soweit eine Abnahme zu erfolgen hat, ist – außer bei berechtigter Abnahmeverweigerung – der Abnahmetermin maßgebend, hilfsweise die Meldung der Abnahmebereitschaft.
4. Werden der Versand bzw. die Abnahme des Liefergegenstandes aus Gründen verzögert, die der Besteller zu vertreten hat, so werden ihm, beginnend einen Monat nach Meldung der Versand- bzw. der Abnahmebereitschaft, die durch die Verzögerung entstandenen Kosten berechnet. Wird der Versand auf Wunsch des Bestellers verzögert, so ist der Lieferer berechtigt, nach Setzung und fruchtlosem Ablauf einer angemessenen Frist, anderweitig über den Liefergegenstand zu verfügen und den Besteller mit angemessen verlängerter Frist zu beliefern.
5. Ist die Nichteinhaltung der Lieferzeit auf höhere Gewalt, auf Arbeitskämpfe oder sonstige Ereignisse, die außerhalb des Einflussbereiches des Lieferanten liegen, zurückzuführen, so verlängert sich die Lieferzeit angemessen. Der Lieferer wird dem Besteller den Beginn und das Ende derartiger Umstände baldmöglichst mitteilen.

6. Der Besteller kann ohne Fristsetzung vom Vertrag zurücktreten, wenn dem Lieferer die gesamte Leistung vor Gefahrübergang endgültig unmöglich wird. Der Besteller kann darüber hinaus vom Vertrag zurücktreten, wenn bei einer Bestellung die Ausführung eines Teils der Lieferung unmöglich wird und er ein berechtigtes Interesse an der Ablehnung der Teillieferung hat. Ist dies nicht

der Fall, so hat der Besteller den auf die Teillieferung entfallenen Vertragspreis zu zahlen. Dasselbe gilt bei Unvermögen des Lieferanten. Im Übrigen gilt Abschnitt VIII.2. Tritt die Unmöglichkeit oder das Unvermögen während des Annahmeverzuges ein oder ist der Besteller für diese Umstände allein oder weit überwiegend verantwortlich, bleibt er zur Gegenleistung verpflichtet.

7. Kommt der Lieferer in Verzug und erwächst dem Besteller hieraus ein Schaden, so ist er berechtigt, eine pauschale Verzugsentschädigung zu verlangen. Sie beträgt für jede volle Woche der Verspätung 0,5 %, im Ganzen aber höchstens 5 % vom Wert desjenigen Teils der Gesamtlieferung, der infolge der Verspätung nicht rechtzeitig oder nicht vertragsgemäß genutzt werden kann. Setzt der Besteller dem Lieferer – unter Berücksichtigung der gesetzlichen Ausnahmefälle – nach Fälligkeit eine angemessene Frist zur Leistung und wird die Frist nicht eingehalten, ist der Besteller im Rahmen der gesetzlichen Vorschriften zum Rücktritt berechtigt. Er verpflichtet sich, auf Verlangen des Lieferanten in angemessener Frist zu erklären, ob er von seinem Rücktrittsrecht Gebrauch macht. Weitere Ansprüche aus Lieferverzug bestimmen sich ausschließlich nach Abschnitt VII. 2 dieser Bedingungen.

**IV. Gefahrübergang, Abnahme**

1. Die Gefahr geht auf den Besteller über, wenn der Liefergegenstand das Werk verlassen hat, und zwar auch dann, wenn Teillieferungen erfolgen oder der Lieferer noch andere Leistungen, z.B. die Versandkosten oder Anlieferung und Aufstellung, übernommen hat. Soweit eine Abnahme zu erfolgen hat, ist diese für den Gefahrübergang maßgebend. Sie muss unverzüglich zum Abnahmetermin, hilfsweise nach der Meldung des Lieferanten über die Abnahmebereitschaft durchgeführt werden. Der Besteller darf die Abnahme bei Vorliegen eines nicht wesentlichen Mangels nicht verweigern.
2. Verzögert sich oder unterbleibt der Versand bzw. die Abnahme infolge von Umständen, die dem Lieferer nicht zuzurechnen sind, geht die Gefahr vom Tage der Meldung der Versand bzw. Abnahmebereitschaft auf den Besteller über. Der Lieferer verpflichtet sich, auf Kosten des Bestellers die Versicherungen abzuschließen, die dieser verlangt.



3. Teillieferungen sind zulässig, soweit für den Besteller zumutbar.

## V. Eigentumsvorbehalt

1. Der Lieferer behält sich das Eigentum an dem Liefergegenstand vor, bis sämtliche Forderungen des Lieferers gegen den Besteller aus der Geschäftsverbindung einschließlich der künftig entstehenden Forderungen, auch aus gleichzeitig oder später abgeschlossenen Verträgen, beglichen sind. Dies gilt auch dann, wenn einzelne oder sämtliche Forderungen des Lieferers in eine laufende Rechnung aufgenommen wurden und der Saldo gezogen und anerkannt ist.

Bei vertragswidrigem Verhalten des Bestellers insbesondere bei Zahlungsverzug, ist der Lieferer zur Rücknahme des Liefergegenstandes nach Mahnung berechtigt und der Besteller zur Herausgabe verpflichtet.

Auf Grund des Eigentumsvorbehalts kann der Lieferer den Liefergegenstand nur herausverlangen, wenn er vom Vertrag zurückgetreten ist. Bei Pfändungen oder sonstigen Eingriffen Dritter hat der Besteller den Lieferer unverzüglich zu benachrichtigen.

2. Der Besteller ist berechtigt, den Liefergegenstand im ordentlichen Geschäftsgang weiter zu veräußern. Er tritt jedoch dem Lieferer bereits jetzt alle Forderungen ab, die ihm aus der Weiterveräußerung gegen den Abnehmer oder gegen Dritte erwachsen.

Zur Einziehung dieser Forderungen ist der Besteller auch nach der Abtretung ermächtigt. Die Befugnis des Lieferers, die Forderungen selbst einzuziehen, bleibt hiervon unberührt.

Die Einziehungsbefugnis erlischt, wenn

- a. der Besteller mit seinen Zahlungsverpflichtungen gegenüber dem Lieferer in Verzug gerät oder
- b. sie widerrufen ist oder
- c. ein Antrag auf Eröffnung eines Insolvenzverfahrens gestellt ist.

Der Lieferer kann dann verlangen, dass der Besteller ihm die abgetretenen Forderungen und deren Schuldner bekannt gibt, alle zum Einzug erforderlichen Angaben macht, die dazugehörigen Unterlagen aushändigt und den Schuldner die Abtretung mitteilt, soweit nicht bereits durch den Lieferer geschehen.

Wird der Liefergegenstand zusammen mit anderen Waren, die dem Lieferanten nicht gehören, weiterveräußert, gilt die Forderung des Bestellers gegen den Abnehmer in Höhe des zwischen Lieferer und Besteller vereinbarten Lieferpreises als abgetreten.

3. Der Besteller darf den Liefergegenstand weder verpfänden noch zur Sicherheit übereignen.
4. Der Lieferer ist berechtigt, den Liefergegenstand auf Kosten des Bestellers gegen Diebstahl, Bruch-, Feuer-, Wasser- und sonstige Schäden zu versichern, sofern nicht der Besteller selbst die Versicherung nachweislich abgeschlossen hat.
5. Wird im Zusammenhang mit der Bezahlung des Kaufpreises durch den Besteller eine wechselseitige Haftung des Lieferers begründet, so erlöschen der Eigentumsvorbehalt, einschließlich seiner vereinbarten Sonderformen, oder sonstige zur Zahlungssicherung vereinbarte Sicherheiten nicht vor Einlösung des Wechsels durch den Besteller als Bezogenem.

## VI. Mängelansprüche

Für Sach- und Rechtsmängel der Lieferung haftet der Lieferer unter Ausschluss weiterer Ansprüche – vorbehaltlich Abschnitt VII – wie folgt:

### Sachmängel

1. Alle diejenigen Teile sind nach Wahl des Lieferers nachzubessern oder mangelfrei zu ersetzen, die sich infolge eines vor dem Gefahrübergang liegenden Umstandes als mangelhaft herausstellen.  
  
Die Feststellung solcher Mängel ist dem Lieferer unverzüglich schriftlich anzuzeigen. Ersetzte Teile werden Eigentum des Lieferers.
2. Zur Vornahme aller dem Lieferer notwendig erscheinenden Nachbesserungen und Ersatzlieferungen hat der Besteller nach Verständigung mit dem Lieferer diesem die erforderliche Zeit und Gelegenheit zu geben; andernfalls ist der Lieferer von der Haftung für die daraus entstehenden Folgen befreit. Nur in dringenden Fällen der Gefährdung der Betriebssicherheit bzw. zur Abwehr unverhältnismäßig großer Schäden, wobei der Lieferer sofort zu verständigen ist, hat der Besteller das Recht, den Mangel selbst oder durch Dritte beseitigen zu lassen und vom Lieferer Ersatz der erforderlichen Aufwendungen zu verlangen.
3. Der Lieferer trägt – soweit sich die Beanstandung als berechtigt herausstellt – die zum Zwecke der Nacherfüllung erforderlichen Aufwendungen, soweit hierdurch keine unverhältnismäßige Belastung des Lieferers eintritt. Soweit sich die Aufwendungen dadurch erhöhen, dass der Käufer die Kaufsache nach Ablieferung an einen anderen Ort als den Erfüllungsort verbracht hat, sind dadurch entstehende Mehrkosten

vom Käufer zu tragen. Der Lieferer ersetzt bei dem Verkauf einer neu hergestellten Sache außerdem im Umfang seiner gesetzlichen Verpflichtungen die vom Besteller geleisteten Aufwendungen im Rahmen von Rückgriffsansprüchen in der Lieferkette.

4. Der Besteller hat im Rahmen der gesetzlichen Vorschriften ein Recht zum Rücktritt vom Vertrag, wenn der Lieferer – unter Berücksichtigung der gesetzlichen Ausnahmefälle – eine ihm gesetzte angemessene Frist für die Nachbesserung oder Ersatzlieferung wegen eines Sachmangels fruchtlos verstreichen lässt. Liegt nur ein unerheblicher Mangel vor, steht dem Besteller lediglich ein Recht zur Minderung des Vertragspreises zu. Das Recht auf Minderung des Vertragspreises bleibt ansonsten ausgeschlossen.
5. Weitere Ansprüche bestimmen sich ausschließlich nach Abschnitt VII.2. dieser Bedingungen.
6. Keine Haftung wird insbesondere in folgenden Fällen übernommen:

Ungeeignete oder unsachgemäße Verwendung, fehlerhafte Montage bzw. Inbetriebsetzung durch den Besteller oder Dritte, natürliche Abnutzung, fehlerhafte oder nachlässige Behandlung, nicht ordnungsgemäße Wartung, ungeeignete Betriebsmittel, mangelhafte Bauarbeiten, ungeeigneter Baugrund, chemische, elektrochemische oder elektrische Einflüsse – sofern sie nicht vom Lieferer zu verantworten sind.

Für Mängel des vom Besteller angelieferten Materials haftet der Lieferer nur, wenn er bei Anwendung fachmännischer Sorgfalt die Mängel hätte erkennen müssen. Bei Fertigung nach Zeichnung des Bestellers haftet der Lieferer nur für die zeichnungsmäßige Ausführung.

Werden Sonderwerkzeuge in Auftrag gegeben, so darf die Bestellmenge um 10 %, mindestens jedoch um 2 Stück über- oder unterschritten werden.

7. Bessert der Besteller oder ein Dritter unsachgemäß nach, besteht keine Haftung des Lieferers für die daraus entstehenden Folgen. Gleiches gilt für ohne vorherige Zustimmung des Lieferers vorgenommene Änderungen des Liefergegenstandes.

### Rechtsmängel

8. Führt die Benutzung des Liefergegenstandes zur Verletzung von gewerblichen Schutzrechten oder Urheberrechten im Inland, wird der Lieferer auf seine Kosten dem Besteller grundsätzlich das Recht zum weiteren Gebrauch verschaffen oder den



Liefergegenstand in für den Besteller zumutbarer Weise derart modifizieren, dass die Schutzrechtsverletzung nicht mehr besteht.

Ist dies zu wirtschaftlich angemessenen Bedingungen oder in angemessener Frist nicht möglich, ist der Besteller zum Rücktritt vom Vertrag berechtigt. Unter den genannten Voraussetzungen steht auch dem Lieferer ein Recht zum Rücktritt vom Vertrag zu.

Darüber hinaus wird der Lieferer den Besteller von unbestrittenen oder rechtskräftig festgestellten Ansprüchen der betreffenden Schutzrechtsinhaber freistellen.

9. Die in Abschnitt VI.8. genannten Verpflichtungen des Lieferers sind vorbehaltlich Abschnitt VII.2. für den Fall der Schutz oder Urheberrechtsverletzung abschließend.

Sie bestehen nur, wenn

- a. der Besteller den Lieferer unverzüglich von geltend gemachten Schutz- oder Urheberrechtsverletzungen unterrichtet,
- b. der Besteller den Lieferer in angemessenem Umfang bei der Abwehr der geltend gemachten Ansprüche unterstützt bzw. dem Lieferer die Durchführung der Modifizierungsmaßnahmen gemäß Abschnitt VI.8. ermöglicht,
- c. dem Lieferer alle Abwehrmaßnahmen einschließlich außergerichtlicher Regelungen vorbehalten bleiben,
- d. der Rechtsmangel nicht auf einer Anweisung des Bestellers beruht und
- e. die Rechtsverletzung nicht dadurch verursacht wurde, dass der Besteller den Liefergegenstand eigenmächtig geändert oder in einer nicht vertragsgemäßen Weise verwendet hat.

10. Der Besteller übernimmt für die von ihm beizubringenden Unterlagen, wie Zeichnungen, Lehren, Muster oder dgl., die alleinige Verantwortung. Der Besteller hat dafür einzustehen, dass von ihm vorgelegte Ausführungszeichnungen in Schutzrechte Dritter nicht eingreifen. Der Lieferer ist dem Besteller gegenüber nicht zur Prüfung verpflichtet, ob durch die Abgabe von Angeboten auf Grund ihm eingesandter Ausführung irgendwelche Schutzrechte Dritter verletzt werden. Ergibt sich trotzdem aus anspruchsbegründenden Tatsachen eine Haftung des Lieferers, so hat der Besteller ihn schadlos zu halten.

## VII. Haftung des Lieferers, Haftungsausschluss

1. Wenn der Liefergegenstand infolge vom Lieferer schuldhaft unterlassener oder fehlerhafter Vorschläge oder Beratungen,

die vor oder nach Vertragsschluss erfolgten, oder durch die schuldhaft Verletzung anderer vertraglicher Nebenverpflichtungen – insbesondere Anleitung für Bedienung und Wartung des Liefergegenstandes – vom Besteller nicht vertragsgemäß verwendet werden kann, so gelten unter Ausschluss weiterer Ansprüche des Bestellers die Regelungen der Abschnitte VI und VII.2.

2. Für Schäden, die nicht am Liefergegenstand selbst entstanden sind, haftet der Lieferer – aus welchen Rechtsgründen auch immer – nur
  - a. bei Vorsatz und grober Fahrlässigkeit,
  - b. bei schuldhafter Verletzung von Leben, Körper, Gesundheit,
  - c. bei Mängeln, die er arglistig verschwiegen hat,
  - d. im Rahmen einer Garantiezusage,
  - e. bei Mängeln des Liefergegenstandes, soweit nach Produktionshaftungsgesetz für Personen- oder Sachschäden an privat genutzten Gegenständen gehaftet wird.

Bei schuldhafter Verletzung wesentlicher Vertragspflichten haftet der Lieferer auch bei einfacher Fahrlässigkeit, allerdings begrenzt auf den vertragstypischen, vernünftigerweise vorhersehbaren Schaden.

Weitere Ansprüche sind ausgeschlossen.

## VIII. Verjährung

Alle Ansprüche des Bestellers – aus welchen Rechtsgründen auch immer – verjähren in 12 Monaten; dies gilt auch für die Verjährung von Rückgriffsansprüchen in der Lieferkette gem. § 445 b Abs. 1 BGB, sofern der letzte Vertrag in dieser Lieferkette kein Verbrauchsgüterkauf ist. Die Ablaufhemmung aus § 445 b Abs. 2 BGB bleibt unberührt. Für Schadensersatzansprüche nach Abschnitt VII.2. a-c und e gelten die gesetzlichen Fristen. Sie gelten auch für Mängel eines Bauwerks oder für Liefergegenstände, die entsprechend ihrer üblichen Verwendungsweise für ein Bauwerk verwendet wurden und dessen Mangelhaftigkeit verursacht haben.

## IX. Softwarenutzung

Soweit im Lieferumfang Software enthalten ist, wird dem Besteller ein nicht ausschließliches Recht eingeräumt, die gelieferte Software einschließlich ihrer Dokumentationen zu nutzen.

Sie wird zur Verwendung auf dem dafür bestimmten Liefergegenstand überlassen. Eine Nutzung der Software auf mehr als einem System ist untersagt.

Der Besteller darf die Software nur im gesetzlich zulässigen Umfang (§§ 69 a ff. UrhG) vervielfältigen, überarbeiten, übersetzen oder von dem Objektcode in den Quellcode umwandeln. Der Besteller verpflichtet sich, Herstellerangaben – insbesondere Copyright-Vermerke – nicht zu entfernen oder ohne vorherige ausdrückliche Zustimmung des Lieferers zu verändern.

Alle sonstigen Rechte an der Software und den Dokumentationen einschließlich der Kopien bleiben beim Lieferer bzw. beim Softwarelieferanten. Die Vergabe von Unterlizenzen ist nicht zulässig.

## X. Anwendbares Recht, Gerichtsstand

1. Für alle Rechtsbeziehungen zwischen dem Lieferer und dem Besteller gilt ausschließlich das für die Rechtsbeziehungen inländischer Parteien untereinander maßgebliche Recht der Bundesrepublik Deutschland.
2. Gerichtsstand ist das für den Sitz des Lieferers zuständige Gericht. Der Lieferer ist jedoch berechtigt, am Hauptsitz des Bestellers Klage zu erheben.

## XI. Besondere Bedingungen für Bearbeitungsverträge (Fertigstellung, Aufarbeitung, Umarbeitung oder Wiederherstellung von Werkzeugen)

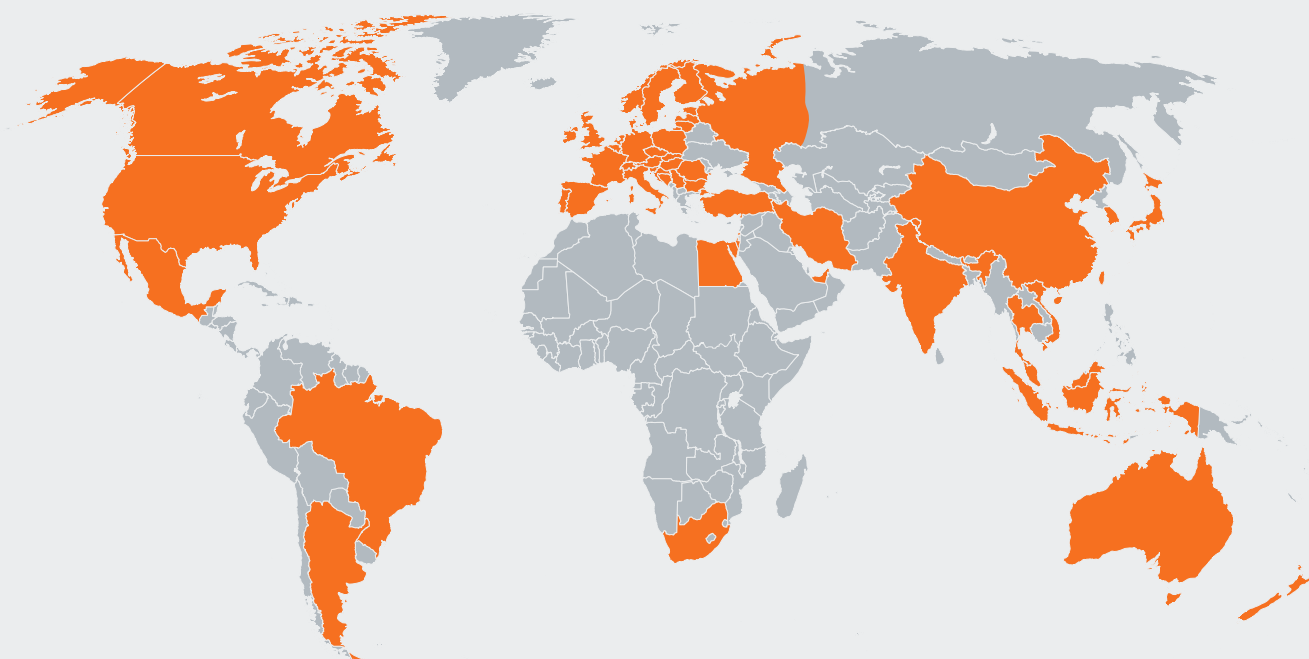
Ergänzend zu oder abweichend von den Lieferbedingungen gilt für Bearbeitungsverträge:

1. Für das Verhalten des an den Bearbeiter eingesandten Materials übernimmt dieser keine Haftung. Sein Anspruch auf Vergütung bleibt unberührt.
2. Wird das Material bei der Bearbeitung durch Verschulden des Bearbeiters unbrauchbar, entfällt sein Vergütungsanspruch.

Der Schadensersatzanspruch des Bestellers richtet sich nach Abschnitt VII.2. der Lieferbedingungen.







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